

INSURANCE FUNDS

And their Investment

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PREFACE

THE interest of the authors in Insurance Finance is a product of their studies of industrial finance. An analysis of the sources and forms of the supply of capital to industry brings a speedy realization of the important part played in the capital market by insurance concerns, and renders imperative a study of those institutions. Numerous books deal with the investment activities of banks, describing the origin and nature of the resources at their disposal and relating these to the employment of those resources and we are surprised to learn that there appears to be no book, at least in English, dealing with insurance in the same way. The material is available in scattered papers, mostly presented to professional associations and conferences, and we have thought it useful to co-ordinate it for the general student of economic problems. The subject is invested with particular importance at the moment because of the prevailing uncertainty in the outlook and because of the current experiments with, and proposals for, reform of the economic organization. Most of these experiments and proposals, particularly those in the monetary field, raise profound problems for all those concerned with long-term money contracts, and it is therefore hoped that the professional student of insurance will find material of interest and value in this work.

The book begins with a description in non-technical language of the origin and nature of the

funds which accumulate in the hands of insurance concerns, proceeds with an analysis of the methods of employing these funds, and then discusses the operation of these financial processes over time. We are greatly indebted to Mr. Norman Plant, F.I.A., for giving us throughout the benefit of his wide technical knowledge and practical experience, and also to Mr. A. F. Schwartz, F.A.S., F.A.I.A., for his valuable advice regarding the position in the U.S.A. Neither of these gentlemen is, of course, responsible for the interpretations we have placed on the information furnished by them. Professor Arnold Plant was responsible for the conception of the book, and has provided the constant stimulus necessary for its completion.

CHAPTER I

ACCUMULATION OF FUNDS BY NON-LIFE INSURANCE OFFICES

§ 1. ONE of the most important sections of the organization of a modern community is that part of the financial mechanism which facilitates and controls the flow of new savings from those who make them to those who use them. Some are used by the savers, while to find users for the remainder, savers have recourse to various kinds of intermediaries. The larger savings may be invested through the medium of solicitors or the Stock Exchange, and smaller savings through savings banks, building and friendly societies, and so forth. Among the many media thus provided, a very important place is taken by insurance companies, through whom pass a very considerable proportion of the country's savings, both small and large.

The importance of this channel is made clear in the total figures for British insurance companies, compiled by the *Statist*,¹ which shows that in 1932 total assets of these companies totalled nearly £1,373 Mn., of which about £1,200 Mn. was invested. Of this total something like four-fifths were the assets of life insurance companies,

¹ *Statist Insurance Supplement*, July 8th, 1933

and the balance of fire, marine, and other types. In the following pages an attempt is made to show how it comes about that these immense funds have been accumulated, and to ascertain the principles which must govern the way in which they are employed.

§ 2. The demand for insurance is due to one of the inevitable facts of human existence—that, despite his best efforts to escape them, man is at all times exposed to risks and uncertainties. In the course of time it has been discovered that some types of these risks can be largely eliminated by means of a system of pooling, or insurance. If risks can be spread over a sufficiently large and varied group, what was for the individual a small chance of a severe, perhaps disastrous, loss becomes for the group, and for each member of it, the certainty of a small loss, or in other words, a small, regular expense which can be provided for in advance like other expenses.

§ 3. The simplest possible form of such an insurance pool is a group of individuals who have come to a mutual agreement that, if any one of their number meets with a specified sort of misfortune, his loss will be shared among all the members of the group. Thus if a thousand farmers should form a fire insurance pool, any one of them who was so unfortunate as to have his farm burnt down would have 99.9% of the loss made good to him by the other members, each of whom would pay 0.1% of the loss. (In practice, each member would probably be required to pay more than a proportional share of his own loss, in

order to give him an incentive to take adequate precautions against fire.)

For risks to be capable of elimination in this way, they must of course be separate. If any considerable proportion of the members of the pool are likely to be simultaneously involved in a common catastrophe, such as a prairie fire, the resultant loss to the pool and to each member might well be very large, and the elimination of risk would therefore be far from complete.

In so simple an organization as that indicated above a number of difficulties would very shortly become apparent. In the first place, the farms would not be all of equal value, and it would be manifestly unfair for owners of buildings which would cost little to replace to pay as large contributions as those, the replacement of whose buildings would involve the pool in far larger expenditure. To prevent the dissatisfied owners of small properties from splitting off to join another group or to form a new group of their own, it would soon be necessary to make contributions roughly proportionate to the value of the buildings insured. This would entail some method of valuation and a greatly increased complexity in the calculations of contributions, probably necessitating the employment of some sort of manager, whose salary would have to be met out of the contributions of members.

The next difficulty would arise because, even when contributions had been adjusted to the values of the properties insured, they would require further adjustment to allow for differences in the degree of risk involved. It would soon be found

inequitable by a farmer owning relatively fire-proof buildings that he should be asked to pay as large a contribution as the owner of a farmhouse built of combustible materials and liable to be completely destroyed at the first spark. To prevent the group from splitting, rates of contribution would have to be adjusted in accordance with some agreed scale of fire risks, thus involving the employment of further skilled labour and increasing management expenses

§ 4. Even after this further adjustment of contributions various financial difficulties would remain. There would certainly be difficulty in obtaining prompt payment of contributions from all members of the group, and some consequent delay in making losses good. This might be overcome by requiring a deposit from members, thus forming a fund out of which losses could be met at once and which would be replenished by contributions as received. The group would therefore be always in possession of some funds, though as these might be required at any moment they could hardly be invested except on demand.

§ 5. Fire losses would occur irregularly throughout the year, and members would never know from month to month how many, if any claims, they might be called upon to meet. Since the yearly number of claims would naturally be much more calculable than the monthly number, it would very probably be found more convenient to arrange for a fixed annual payment from each member of an amount estimated from experience to be sufficient to cover the average cost of a year's

fire losses plus cost of management. If this premium were payable in advance it would provide the pool with funds to meet claims without having to wait for contributions from members. If the year's losses were less than the estimate, the surplus could be refunded to members or deducted from the next premium, while if losses were greater than allowed for, a levy would have to be made or the next premium increased.

If all premiums were paid simultaneously on the same date each year the manager would find himself temporarily in possession of a considerable sum of cash, which would be gradually depleted during the year as losses and expenses were incurred, leaving at the end of the year, if the estimate of expenses and losses had been exactly correct, and no interest had been earned, exactly nothing. As a matter of fact, part of the sum in hand at the beginning of each year could be invested and made to earn interest, but only temporarily, as it would have to be repaid in time to meet the claims and expenses occurring during the later months of the year. (FIG. I.)

✓ If, however, the premiums were paid by members at different dates throughout the year, the funds in hand would never be wholly depleted. If, for instance, one-fourth of the members paid their premiums at the commencement of each quarter, and if the losses occurred fairly regularly quarter by quarter through the year, the funds in hand would fluctuate between three-eighths ($\frac{1}{4} \times \frac{3}{4} + \frac{1}{4} \times \frac{1}{2} + \frac{1}{4} \times \frac{1}{4}$) of the annual premium income immediately before the receipt of a quarter's premiums, and

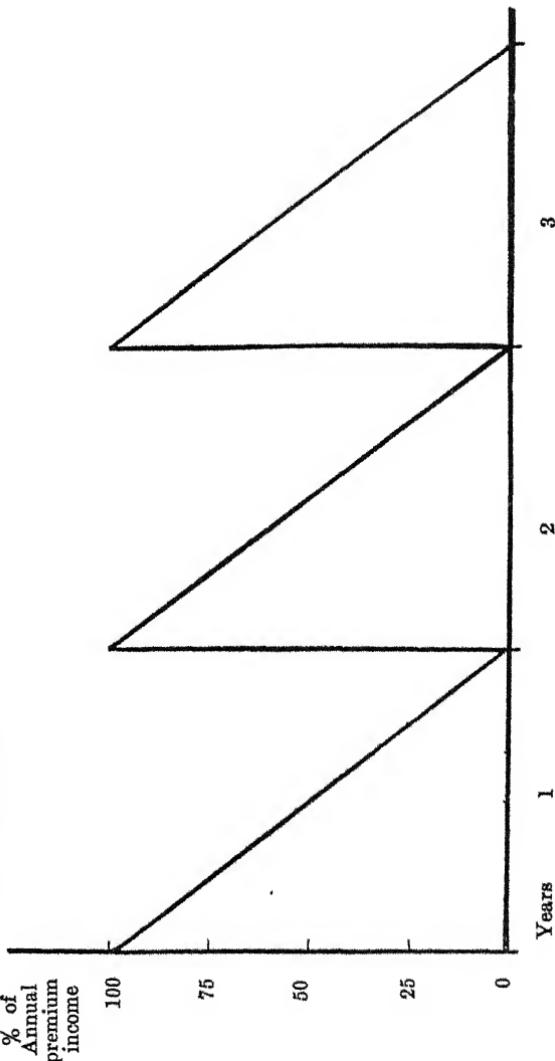


FIG. 1.—Funds in hands of Insurance Society if all annual premiums are paid in advance at commencement of each year and claims are evenly distributed throughout the year.

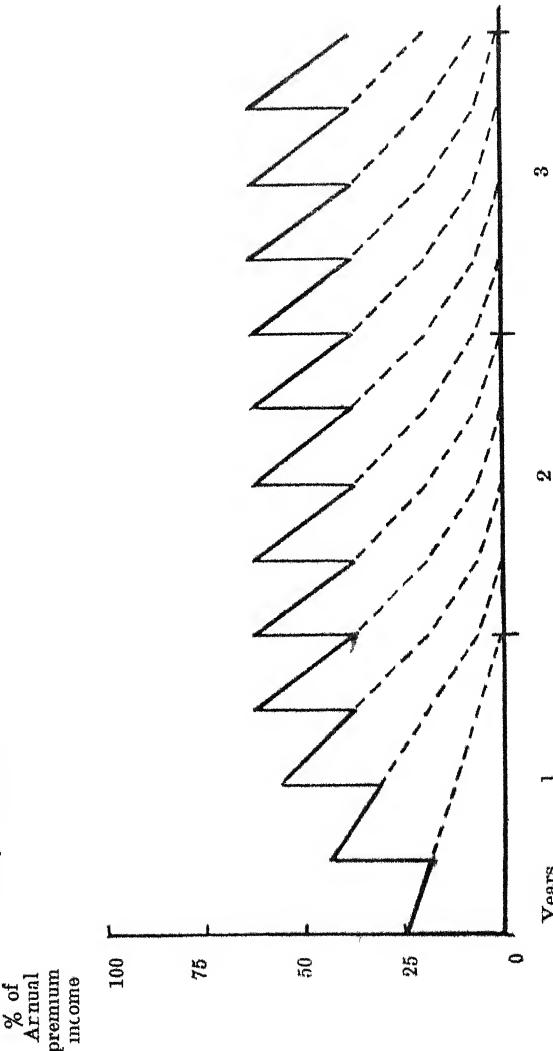
five-eighths $(\frac{1}{4} + \frac{1}{4} \times \frac{3}{4} + \frac{1}{4} \times \frac{1}{2} + \frac{1}{4} \times \frac{1}{4})$ immediately after. (FIG. 2.)

(So long, therefore, as the premium income was maintained and losses were kept within the estimate and occurred fairly regularly, the group would have a permanent fund of about three-eighths of its premium income which could be permanently invested and made to yield interest, thus providing an additional source of income and enabling premiums to be reduced.)

Similarly, if one-twelfth of the premiums were paid at the beginning of each month, funds in hand would fluctuate between eleven and thirteen twenty-fourths of the annual premium, while if the due proportion were paid daily, approximately one-half of the annual premium income would be permanently in hand. Even if there were considerable irregularity in the incidence of claims during the year, and consequent fluctuations in the amount of this fund, it is probable that the extent of these fluctuations would be limited and, with experience, calculable. It would therefore be possible to determine what proportion of the fund was unlikely to be required to meet fluctuations in the incidence of claims and could therefore be permanently invested. (FIG. 3.)

§ 6. While, however, the existence of this fund of unexpired premiums would serve to even out fluctuations in the incidence of claims during the year, there would remain the problem of fluctuations in losses from year to year, and especially the problem of the possible occasional catastrophe involving a large number of members simultane-

FIG. 2.—Funds in hands of Insurance Society if 25% of insurers pay annual premiums in advance at commencement of each quarter and claims are evenly distributed.

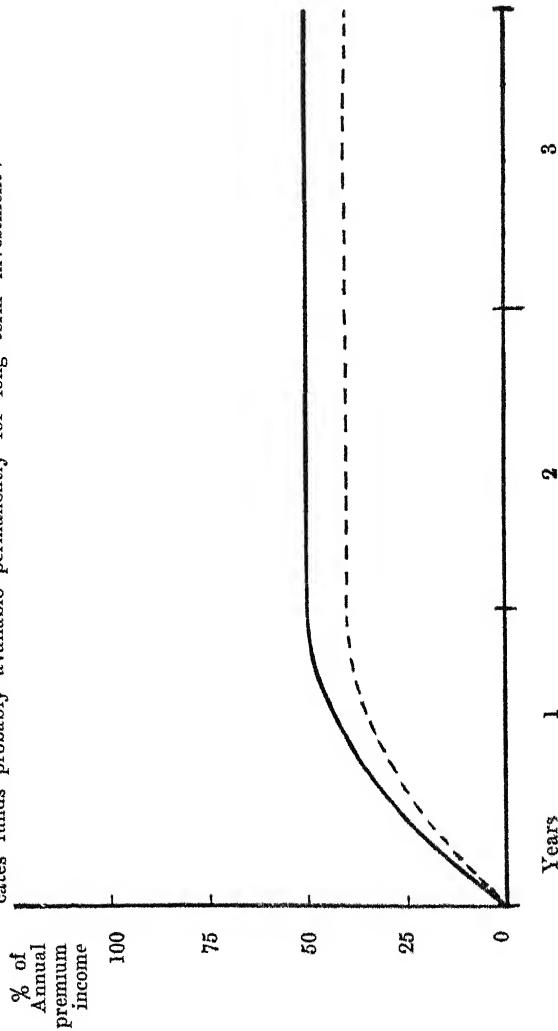


ously. (Irregularity of losses from year to year would involve alternating levies and refunds, or fluctuating rates of premium, while a wholesale catastrophe might render the whole scheme insolvent, or at best impose a crippling levy on those of the members who escaped. To provide against contingencies of this sort, and to even out rates of premium from year to year, it would be desirable to build up some kind of general reserve fund by charging premiums in excess of those required to cover average claims and expenses, and to place annual surpluses to reserve instead of making refunds or reducing premiums. As this reserve fund grew, a large proportion of it too could be invested to earn interest, which could then go to swell the reserve fund further.) Finally, if no early catastrophe occurred, the reserve fund might be considered large enough to meet all probable contingencies and rates of premium could be reduced, not merely to the original level, but below it; for the interest on the new reserve fund would cover part of the expenses and claims, and so reduce the premiums required.)

§ 7. At this point a new difficulty would arise. The low rates of premium and the security provided by the reserve fund would prove very attractive to new entrants. The old members would feel it unfair that they should have paid high premiums for years, while the new entrants shared in the benefits of the reserve fund without having contributed to its creation. They would in fact be subsidised at the expense of the early members. One possible solution of this difficulty would be to

INSURANCE FUNDS

Fig. 3.—Funds in hands of Insurance Society, assuming that an equal number of insurees pay annual premiums in advance on each business day throughout the year and claims are evenly distributed (Broken line indicates funds probably available permanently for long-term investment)



charge differential rates of premium according to the date of joining the group. This would prove inconvenient in practice, and a simpler method would be to charge all premiums on the same basis, and to make payments to the original members in consideration of their having provided the reserve fund. It is even possible that the original members would refuse to allow the new members to come in on terms of equality at all, but would form themselves into a corporation, charging new members such premiums as they were prepared to pay, and retaining all the surplus, including interest, for their own profit.

§ 8 We have now all the elements of a typical insurance company, such as provides insurance against not only fire, but also accidents to persons or property, theft, loss of goods in transit, employers' and motorists' liability, and many other misfortunes. (The capital of such a company, over and above what is required for premises, equipment, etc., is invested in interest-bearing securities and forms the society's reserve fund.) Its premiums are normally adjusted so as to yield a premium income sufficient to cover expected claims plus expenses, together with a margin of profit, the size of which will be determined by competition. The remuneration of the proprietors of the society is derived

- (1) from this margin of profit,
- (2) from the interest earned on the investible portion of the unexpired half of the premium income; and
- (3) from interest on the reserve fund.

The size of the profit margin, being determined by competition, possibly including competition from mutual insurance schemes, will probably be moderate. Indeed, there seems to be no reason why it should not sometimes be negative. In order to attract business and so obtain the use of the unexpired half of the premiums, it might pay an insurance society to return to insurers a part of the interest earned thereon by fixing premium rates so low as to incur, on the average, a small loss on its insurance operations; for the addition of even a part of the interest earned on the unexpired half of the premiums to the interest earned on the capital constituting the reserve might be considered by the proprietors to be sufficient reward for their risk-bearing services.

In point of fact, the average margin of profit earned by British insurance societies on their actual insurance (other than life insurance) business during the past few years has ranged between 1.2% and 4% of the premium income.¹ Many societies do not draw upon this profit at all for paying dividends, which are provided for out of interest received, but add it year by year to the reserve fund, thus strengthening the position of the company and enabling increased business to be undertaken and increased dividends paid in subsequent years.

§ 9. If an insurance company has capital and reserve funds equal to its annual premium income (funds of the majority of English companies are appreciably larger than this), its total funds at any

¹ *Economist Insurance Supplement*, July 15th, 1933.

moment will be equal to about 150% of its annual premium income, less an amount, equal say to 10% of its annual premium income, which it has required to expend on its premises, fittings, etc. Of its unexpired premiums it will have to keep a proportion, say 20%, quite liquid in order to meet fluctuations in receipts of premiums and payments of losses from month to month during the year, thus leaving funds available for investment equal to about 130% of its annual premium income.)

In investing these funds, the company must allow for the possibility of fluctuations both in claims (and/or expenses), and in premium income from one year to another. The effects of these two possible sources of disturbance are in essentials somewhat different, and must be examined separately.

The effect of an increase in claims (and/or expenses) in any year is in the first place to reduce the margin of profit on the insurance account and so to reduce the annual increase in the reserve. If the increase is no greater than this normal margin of profit, there is no need for it to have any further result. If, however, it is so great as to cause a loss on insurance business during the year, this loss must be made good out of interest received, thus reducing the amount available for shareholders' dividends.

If the normal margin of profit on the insurance business we have in mind is 3% per annum, and the average net rate of interest earned on invested funds is 4%, equivalent to over 5% of the annual premium income, the total annual income available to meet abnormal losses without touching invest-

ments is equal to over 8% of the annual premium income, about $8\frac{1}{2}\%$ of annual claims plus expenses, or (if expenses are equal to 20% of annual premium income) about $10\frac{1}{2}\%$ of normal claims. Only if the increase in claims exceeded this figure would the company be compelled to have recourse to its invested funds.

It would therefore require a very substantial increase in losses to compel such an insurance company to realize any part of its invested funds, and the risk of compulsory disinvestment could be still further reduced by arranging for a portion—say 5%—of its investments to mature each year. This would provide additional cash resources equal to $6\frac{1}{2}\%$ of the annual premiums, or $8\frac{1}{2}\%$ of normal claims. An increase in claims up to nearly 20% above normal could then be met in any year without having recourse to the sale of investments.

The other way in which disinvestment might be necessitated is through a falling off in the premium income, which might then be less than enough to cover claims and expenses during the year, and would cause a proportionate decrease in the amount of unexpired premiums in the hands of the society.

Since the excess of cash payments over cash receipts would not be due to losses, but merely to a contraction of business, the directors would presumably not feel justified in obtaining the necessary cash by withholding dividends from shareholders, and would therefore be obliged to disinvest a portion of their funds. This process would be facilitated by the fact that the additional cash

would not be required all at once, but gradually during the course of the year. Nevertheless, if the company wished to avoid the possibility of being forced to sell securities at an awkward time, it would seem prudent to hold in liquid form, or to arrange for the annual maturing of, a fair proportion of the funds representing the unexpired premiums; for the probability of a marked decrease in premium income would appear to be greater than that of a large sudden rise in claims or expenses. It might, for instance, be found wise to arrange for a further 20% of the funds representing the unexpired premiums, or about $7\frac{1}{2}\%$ of total investments, to be held in an easily realizable form or to mature each year.

If the company made the arrangements indicated above, and either held about $12\frac{1}{2}\%$ of its total investments in liquid form, or arranged for this portion to mature each year, or partly one and partly the other, it could not be compelled to sell securities unless there were an increase of over 30% in claims, or (allowing for normal profit) a decrease of over 35% in premium income, or an increase of, say, 20% in the former accompanied by a decrease of, say, 20% in the latter. It would probably be justified in normal times in ignoring the possibility of fluctuations more violent than these, and in investing the balance of its funds in such a way as to give the best available combination of high interest yield and certainty of payment, without taking into much consideration the question of their liquidity. It may be noted that fluctuations in the rate of interest earned, which,

as will be seen later, are of such importance to life insurance societies, will in non-life insurance offices result merely in corresponding fluctuations in the rates of dividends paid to shareholders.

§ 10. In addition to the company form of insurance organization, there exists an alternative form, which eliminates risks by splitting each transaction into a large number of shares, distributed among a number of comparatively small underwriting concerns. Each of these concerns is thus enabled to take shares in a large number of separate risks, and so obtain the benefits of pooling without having to be of great individual size. The best known of these groups of small insurance concerns is Lloyds, but somewhat similar groups exist in other parts of the world.

Apart from the fact that such a group is composed of a large number of small independent concerns, instead of being one large business, the fundamental financial organization is not really dissimilar from that of an insurance company. Each of the members, who are generally organized in small syndicates, has to deposit, as a guarantee of his ability to meet his commitments, a quantity of good securities, which correspond to the reserve fund of an insurance company, and upon which he draws interest. In addition, interest is presumably earned on the unexpired portions of the premiums paid in advance and goes to augment the profits made on the actual insurance business. The total funds held by the members of such a group as Lloyds must be comparable to those of any one of the greatest (non-life) insurance companies.

AND THEIR INVESTMENT

CHAPTER II

ACCUMULATION OF FUNDS BY LIFE INSURANCE OFFICES—TECHNICAL REASONS

§ I Of the many types of insurance which exist, by far the most important from the point of view of the accumulation and investment of funds is Life Insurance. This is due to the fact that life insurance societies accumulate, in addition to such funds as are common to other types of insurance, special funds of very large size. These are partly necessitated by the technical conditions of life insurance business, and partly due to a public demand for a somewhat peculiar type of investment which life insurance societies are able to provide.

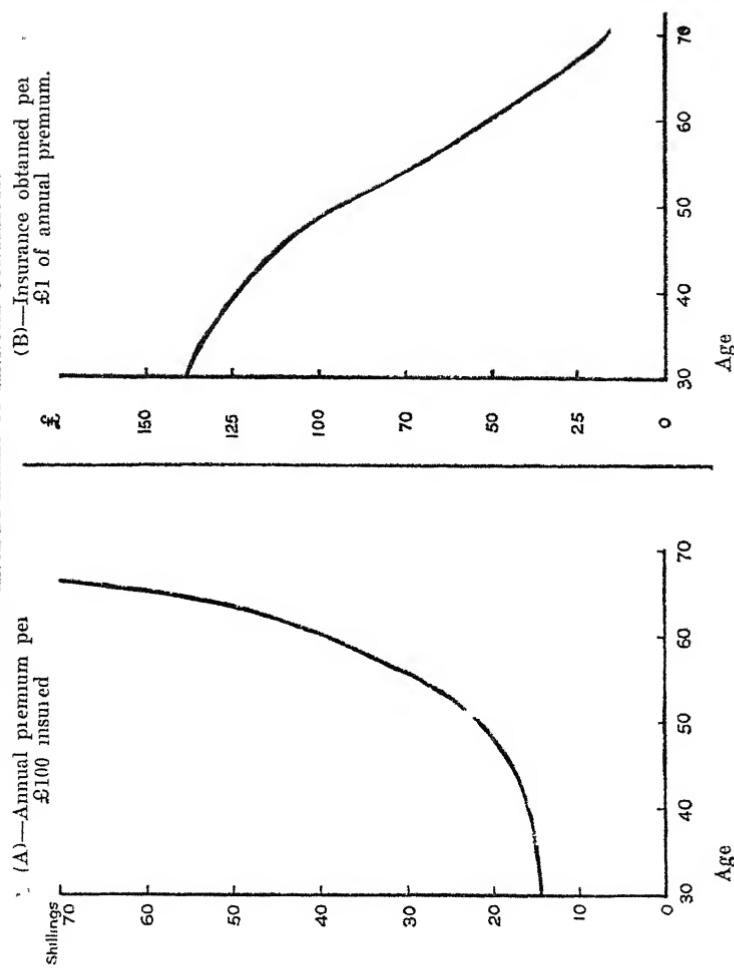
The primary function of life insurance is to insure the beneficiary under the policy against the pecuniary loss which he is likely to suffer in the event of the death of the person insured. Thus a creditor can insure himself against the loss which he would sustain should his debtor die prematurely, or a wife can insure against the loss of support which would follow upon the death of her husband. If no loss can be either reasonably anticipated, or legally assumed, there is no insurable interest, and the contract of insurance is invalid. Every man has, however, a legally insurable

interest in his own life, and may validly insure it, even though he knows of no one who would be financially the worse for his death. The great majority of life insurance policies are in fact taken out in this way by the person insured, for the benefit of his present or possible future dependents.

§ 2. There would at first sight appear to be no reason why life insurance should not be obtained, like other forms of insurance, under a series of separate annual contracts; and in fact temporary cover is frequently obtained in this way. If, however, a man makes a permanent practice of insuring his life in this way, he finds that each year the premium charged him for a given amount of insurance is a little higher than the year before. This is due, of course, to the fact that the death-rate of the population, and therefore the presumed probability of the death of any particular individual, increases with age, slowly up to the age of about fifty, and thereafter with increasing rapidity. The insurance company naturally takes this increasing risk of death into consideration when fixing premiums, and the man who makes a habit of insuring his life by means of a series of short, temporary contracts will therefore find himself faced with the alternatives of paying a continually, and in later life a rapidly, increasing premium, or of allowing the amount of insurance which he carries gradually to fall. (FIG. 4.)

This would, of course, not necessarily be a disadvantage. For many men the period of low premiums and high cover would coincide with that portion of their lives when their family responsi-

FIG. 4.—LIFE INSURANCE BY SERIES OF ANNUAL CONTRACTS.



bilities were heaviest and their dependents likely to suffer most heavily by their deaths, while by the time that the amount of cover provided at a given rate of premium had fallen to a low figure, the pecuniary loss likely to be suffered by their families on account of their deaths would usually be much smaller, and might even be negative.

There is, however, one very serious drawback to this method of insuring one's life permanently by means of a series of separate annual contracts. An individual's probability of death during the ensuing year may increase not only gradually with advancing age, but also suddenly as the result of an illness or accident, thus obliging him to pay a greatly increased premium for his next year's insurance, or perhaps even rendering him completely uninsurable.

§ 3. The obvious way out of this difficulty is to make a contract for a long term of years, whereby, for instance, a fixed annual premium would be paid for an amount of insurance which would decrease with increasing age, in exactly the same way as the amount of insurance obtained for a constant annual premium under a series of annual contracts. The issuing of such long-term contracts would be facilitated by the fact that, given a large enough group, mortality rates are more predictable than the incidence rates of any other risk, while the experience of the past century appears to indicate that any change which is likely to occur in the ensuing period is in the direction of reduced mortality—that is to say, in favour of the company. The premiums charged for such long-term con-

tracts might, of course, have to be rather higher than those fixed for annual contracts; for since the company would be debarred from refusing to continue to insure those whose health had been impaired by illness or accident, the mortality among such a group of long-term insurers would after a short time be higher than that among an equal group of the more selected annual insurers, from whose number those with impaired health could be continually removed. On the other hand, the cost of renewing contracts annually would be saved, and the society's expenses therefore less.

This form of contract, however, though fulfilling its purpose of giving every member of the group the full amount of insurance in each year that he had paid for in that year, while protecting him against the danger of becoming uninsurable through bad health, would probably prove unworkable. Every insurer would need to bind himself to continue to pay his premium for the term of years specified, under legal penalties for breach of contract if he failed to do so, while even if insurers were willing to bind themselves legally in this way, which is very doubtful, it would be difficult, and probably often impossible, for the insurance company to enforce the contract. If no such legally binding provision were inserted in the contract, or if, when inserted, it proved impossible to enforce, the insurance company, while being bound to continue to insure every member of the group who paid his premiums, would be unable to compel the continued payment of premiums by those who wished their policies to lapse.

It would therefore be possible for those insurers whose health remained good to allow their policies to lapse after a time, and to enter into new contracts with another company for the remainder of the original period of insurance. This new contract they could obtain on better terms than those of their old one, for the old one was based on the anticipated mortality-rate of the whole group of insurers. The mortality-rate among those of the group who had maintained their health after a number of years would for some time thereafter naturally tend to be lower than that of the group as a whole, while that of those whose health had been impaired would be above it. The former could therefore do better by quitting the group and obtaining more favourable terms elsewhere than those originally granted to the group as a whole, while the company would be left only with those whose health was impaired and whose death-rate consequently high. The premiums received subsequently to the withdrawal of the best lives would therefore be insufficient to meet the claims, and the company would suffer a loss.

* § 4. In the absence of power to enforce the full maintenance of the contract by all the insured, it is necessary for the company to provide some inducement for the insurers who continue healthy to remain members of the original group. This it can do by withholding part of each man's insurance cover in the earlier years of the contract and restoring it in the later years, so that the insured is getting rather too little insurance for his money to begin with and too much later on. If a sufficiently large portion of

the benefit is thus postponed and there is no surrender value, it will pay even those insureds who remain healthy to continue their contracts in order to obtain the postponed benefits, while if they do leave, the benefits which they forfeit will be sufficient to meet the higher average mortality of those they leave behind and so preserve the company from loss (FIG. 5)

Many ingenious variations of this sort of policy are offered by the different insurance companies, under the name of "Family Income Policies", to those insureds who wish to obtain the maximum of cover at the minimum of cost during those years when their family expenses and responsibilities are at their highest. One type, for instance, ties together into one contract two fundamentally separate contracts of insurance—one a whole-life level premium policy for a fixed amount, the other giving very high benefits to start with, which fall gradually until they disappear altogether after twenty years, although the equal premiums continue to be paid throughout life. Thus in the early years of the combined policy the amount of insurance obtainable per £1 of premium is almost as high in the early years as under a full current benefit policy, while at the end of twenty years it is much less. It then ceases to fall, although the current year's benefits actually covered by the premiums continue to do so, so that in old age the benefits withheld are made available to the survivors (FIG. 6)

Since it is thus necessary, for purely technical reasons, for insurance companies to defer until the

INSURANCE FUNDS

FIG. 5.

Amounts insured per £1 of annual premium under : (a) Series of annual contracts (broken line) *(b) Long-term, full current benefit contract (broken and dotted line) *(c) Long-term contract with some postponement of benefit (solid line)

Horizontal shading indicates benefits withheld in early years of policy, and vertical shading excess benefits granted in later years.

* Lines (b) and (c) are arbitrarily drawn for purposes of illustration.

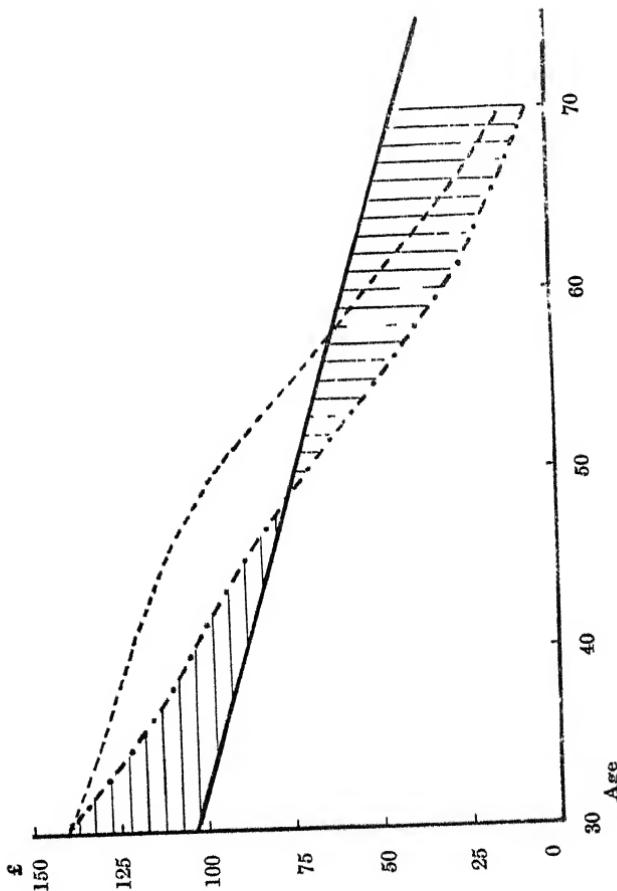
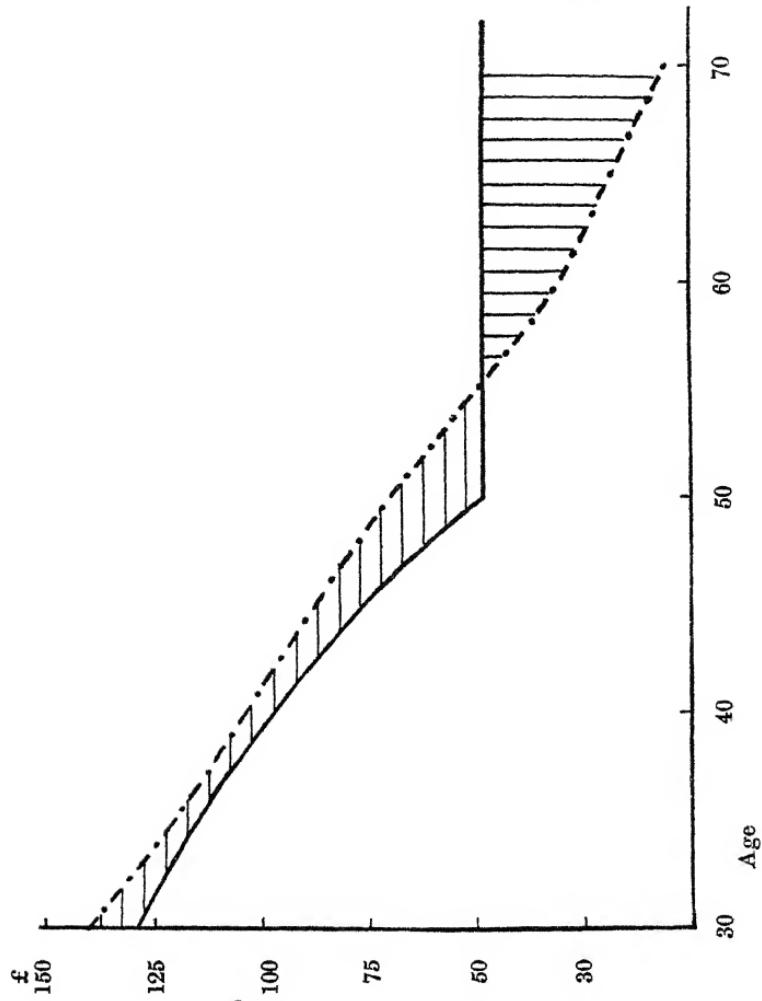


FIG. 6

Amounts insured per £1 of premium under
 current benefit contract (broken and dotted line) (a) Long-term, full
 policy (solid line)

Horizontal shading indicates benefits withheld in early years of policy,
 and vertical shading excess benefits granted in later years

* Line (a) is arbitrarily drawn for purposes of illustration



later years of a policy the distribution of a portion of the benefits paid for by premiums in the earlier years, premium income in the earlier years of a group of policies will be in excess of claims plus expenses. Funds will therefore accumulate in the hands of the insurance company until the later years of the group, when the deferred benefits are paid to those who have survived and claims plus expenses consequently exceed premium income. Meanwhile, of course, these funds have been earning interest. This will have been foreseen when the original rates of premium were fixed, and under pressure of competition between companies the premiums will have been adjusted so as to give the insurers the benefit of the greater part of the expected amount of this interest.

Even in the absence of any other factor, therefore, purely technical considerations would cause considerable quantities of interest-bearing funds to accumulate for long periods in the hands of life-insurance companies. These considerations are, however, reinforced by another and much more important cause, which will be discussed in the next chapter.

AND THEIR INVESTMENT

CHAPTER III

ACCUMULATION OF FUNDS BY LIFE INSURANCE OFFICES—PUBLIC DEMAND FOR INVESTMENT FACILITIES

§ 1. THE second, and by far the more important, cause of the large funds which accumulate in the hands of life insurance societies, as contrasted with societies providing other types of insurance, is the demand which exists on the part of large sections of the public for safe channels for the investment of savings.) Such a demand the life insurance companies—which have in any case to invest large sums, and must therefore keep staffs of skilled investment specialists—are well qualified to supply. Further, in this country the use of this channel is encouraged by the form of Income Tax Law, which exempts from part or all of the tax both income used in paying life insurance premiums and the proceeds of the policies when ultimately received, while ordinary life insurance companies are permitted to deduct their expenses from the interest received from their funds before the calculation of tax, and so in effect pay income tax at a somewhat reduced rate.

§ 2. From one point of view, every act of saving is in itself a form of insurance—insurance against the possible poverty of oneself or one's heirs at

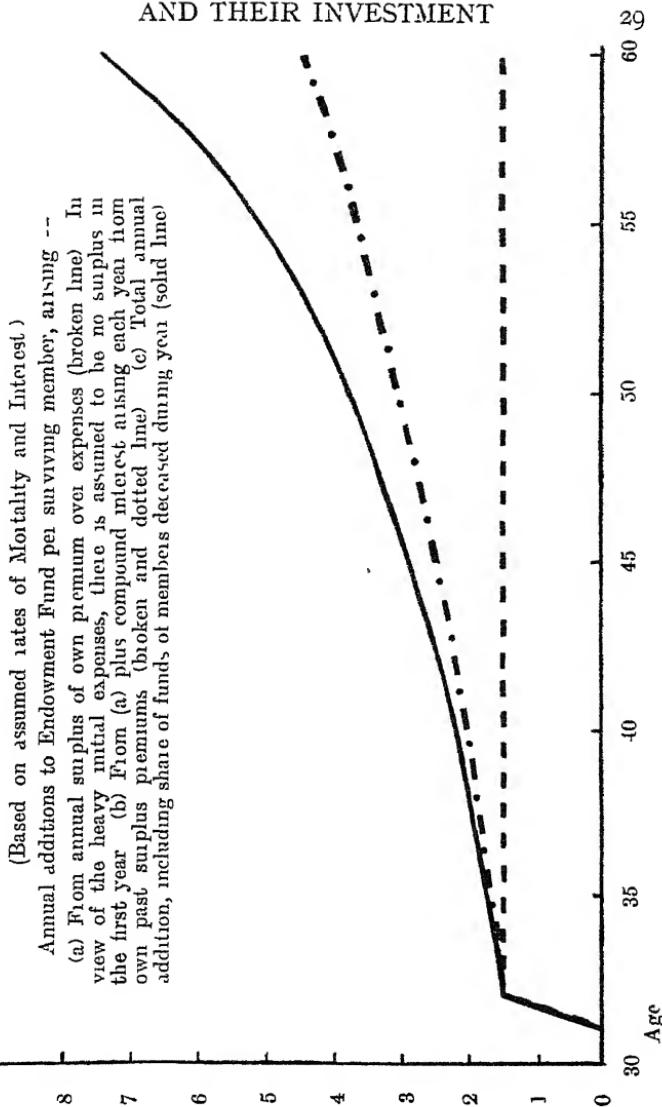
any future date. It is possible for insurance companies to facilitate this simplest form of insurance by accepting premiums on condition that they will be repaid, together with interest at an agreed rate, at death, or on a fixed date.

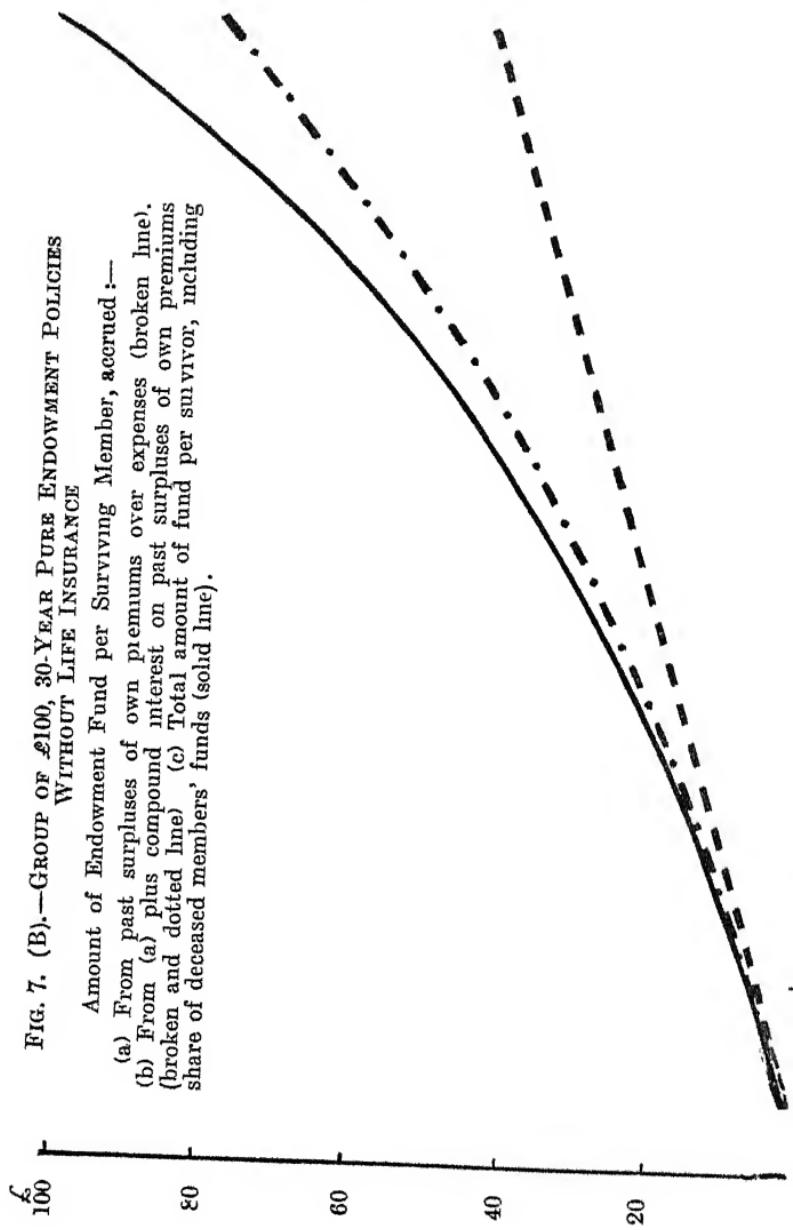
The insurance obtainable in this way against loss to dependents by the insurer's early death will be very small; on the other hand, the insurance obtained by the insured against poverty in later life will be considerable. If the insurer has no dependents, he (or more probably she) may be glad to waive repayment altogether in case of death, and if he has a secure income until the age of, say, sixty, he may be willing to contract for a comparatively small repayment on premature termination of the policy, provided that he can thereby obtain the payment of a larger sum at the age of sixty. This condition the insurance company could afford to accept, for by the time that the contract had matured it would have available not only the surviving insurer's own net premiums (premiums less expenses) plus accrued interest, but also the premiums received on those policies which had become void through death, and part of those which had lapsed through cancellation, plus interest on these. (FIG. 7.)

Such a policy would obviously contain a considerable element of tontine,¹ and we may call it a "Tontine Endowment Policy". It seems to provide insurance of a nature exactly contrary to that

¹ *Tontine*.—A scheme by which a number of persons club together to subscribe the capital of a fund, the income from which is divided each year among the survivors.

FIG 7 (A) — GROUP OF £100, 30-YEAR PURE ENDOWMENT POLICIES, WITHOUT LIFE INSURANCE





furnished by pure life insurance. The latter is insurance against poverty due to premature death; the former against poverty due to outliving income. It would not be far from the truth to say that life insurance is insurance against dying too soon, and endowment insurance is insurance against living too long.

§ 3. (Endowment insurance can be made a still more effective safeguard against poverty in old age if the benefits thereunder are taken in the form of an annuity instead of a cash payment.) An elderly man, who, either because he has no dependents or for some other reason, desires to augment his income during the remainder of his life by consuming his capital, is faced with the difficulty that he does not know how long he has to live. If, expecting to live long, he consumes his capital so slowly that part remains over at his death, he will have lived in greater poverty than he need have done; while if he lives longer than he expects, so that his capital is entirely consumed some time before he dies, his last years may be lived in complete penury. (By surrendering his capital in exchange for a life annuity from an insurance company he can guarantee for himself a certain income, much in excess of the interest yield of the capital expended, for as long as he lives; while the insurance company can set the capital gain which it knows from its mortality tables will accrue on that part of a group of annuities whose beneficiaries die early against the loss on that part whose beneficiaries die late, and so eliminate the risk altogether.

A company providing endowment insurance, the

benefits of which are payable as an annuity, will therefore, for each group of insurers, accumulate funds at interest for a number of years and then gradually pay them out, the whole process, from the start of the insurance to the death of the last annuitant, covering a period of perhaps seventy years or more. (If a company has correctly forecast over this long period the rates of mortality, interest, and expenses, at the end of the period it will be left with some margin on hand which will constitute its profit. If, however, it has over-estimated mortality or interest, or under-estimated expenses, this margin of profit may have disappeared, and it may instead be faced with a loss.

§ 4. Tontine endowment of the sort described, though not uncommon, is not encouraged by insurance societies on account of the practical difficulties to which it is apt to give rise, but in combination with life insurance it is very widely used. Under such a combined policy a constant rate of premium is paid for a fixed term of years in return for a given amount of life insurance during the agreed period and the right to receive a fixed amount of money—usually, though not always, the same as the amount of the life insurance—at the end of the period. (Such a policy insures the dependents of the insured against poverty owing to his early death, and the insured himself against poverty due to his outliving his earning powers, though neither to the extent provided in the one case by a purely life insurance policy, and in the other by a purely endowment policy.) The proportion of the constant combined

premium which is devoted to these two different purposes changes with the age of the insured. In the early years of the policy the cost of providing the current year's insurance is small and the proportion of the premium available for addition to the insurance fund is consequently large. As the insured grows older and his risk of death increases, a larger and larger part of the premium is needed to cover the annual insurance cost, while just before the policy matures the cost of providing the current year's insurance may be nearly equal, or perhaps more than equal, to the amount of the annual premium. Meanwhile, of course, the accumulated fund has been earning compound interest, so that the total annual addition to each survivor's share of the fund may from this cause alone be as large or larger at the end of the period than at the beginning, despite the decrease in the available portion of the premium.

At the same time the fund per head of surviving members has been further swelled by the accumulated excess portions of the premiums of the members who have died before the maturity of their policies. These have been paying, up to the time of their deaths, premiums considerably in excess of those required for their current insurance. This excess is set free by their deaths to be added to the fund arising out of the excess premiums of the surviving members of the group, who consequently receive a payment at the maturity of their policies considerably larger than that provided by the accumulation of their own excess premiums plus interest. Thus life endowment insurance, like

pure endowment, contains a large element of tontine, whereby the survivors benefit at the expense of those who die (FIG. 8)

§ 5. These elements of tontine and investment, which are so marked a feature of life endowment policies, are also present in ordinary whole-life, equal-premium policies. Under these the accumulated funds, instead of being paid out in cash to the survivors at the end of a fixed period of years, are used to provide insurance for them in old age at a rate of premium very greatly below that required to cover the cost of claims. The amounts assured, instead of being paid out *en masse* at the end of a period of, say, thirty years (as with a group of endowment policies), are paid out gradually over a period of, say, a further thirty years as the insured persons die. The insurance fund of the group will therefore be depleted gradually instead of suddenly, so that interest continues to be earned on it, while the survivors continue to pay their premiums as long as they live. It is therefore not necessary to accumulate nearly so large an insurance fund as in the case of life endowment insurance. This means that the annual excess of premium income over claims in the early years need not be so great. The elements of tontine and investment are therefore considerably less marked than in life endowment.

§ 6. If we consider a group of whole-life policies taken out in the same year by persons in early life, we find that the insurance society will gradually accumulate an insurance fund while current premium income plus interest exceeds

FIG. 8. (A)—GROUP OF £100, 30-YEAR LIFE ENDOWMENT INSURANCE POLICIES

(Based on assumed rates of Mortality and Interest.)

Annual additions to Endowment Fund per surviving member, arising :—

- (a) From annual surplus of own premium over share of cost of claims plus expenses (broken line). In view of the heavy initial expenses, there is assumed to be no surplus in the first year.
- (b) From (a) plus compound interest arising from own past surplus premiums (broken and dotted line).
- (c) Total annual addition per survivor including share of funds of members deceased during year (solid line).

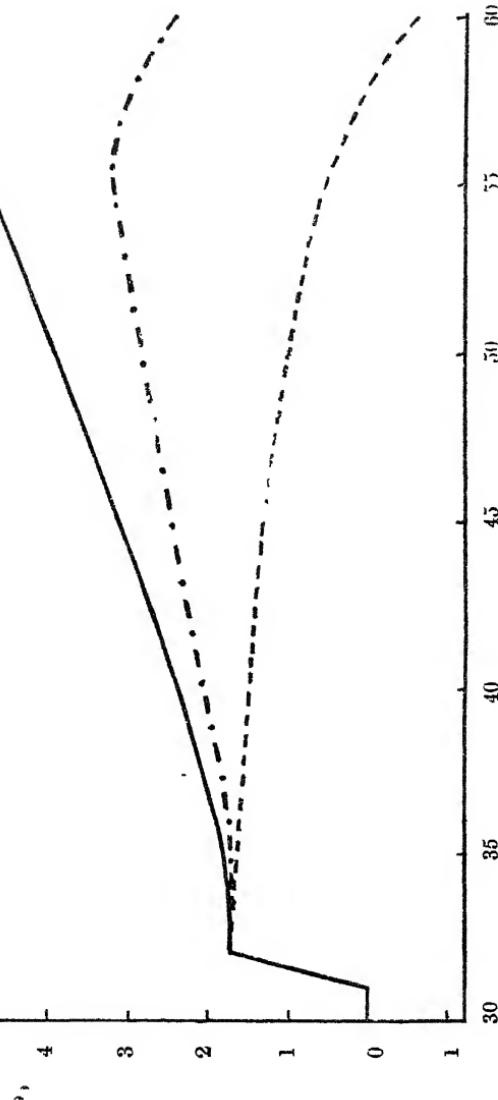
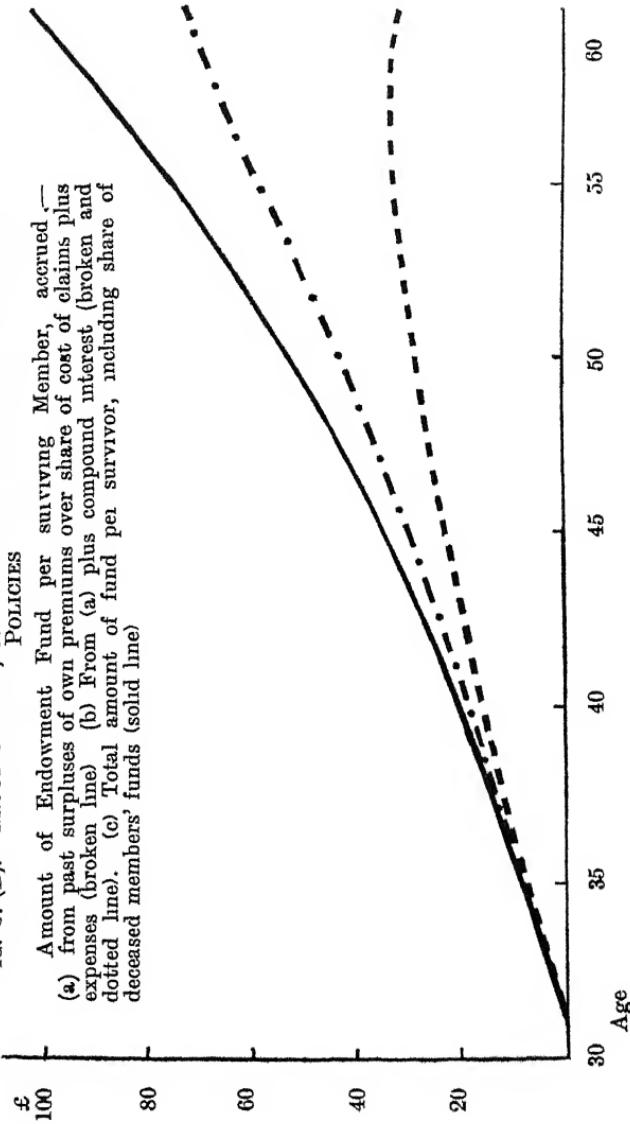


FIG. 8. (B).—GROUP OF £100, 30-YEAR LIFE ENDOWMENT INSURANCE POLICIES



claims and expenses, and then, as premium income falls off and claims rise, gradually pay it out again, the whole process lasting perhaps sixty years or so. For some time after premium income falls below current claims and expenses the fund will continue to grow out of interest receipts; but in due course claims get too large to be met out of current income, and then the capital of the fund must be drawn on. As this is diminished, interest receipts fall off, and the capital of the fund is drawn on more and more rapidly, until, as the group nears extinction, claims begin to fall off with even greater rapidity. In the end, after the last claim has been paid, a small balance should be left in the fund, representing the company's ultimate profit on the whole long transaction. (FIG. 9.)

§ 7. This process of accumulation and decumulation of funds goes on for every individual year group. What is true of each group taken separately, however, is not true of the company as a whole; for the place of the amounts decumulated from the funds of the older groups is taken by the amounts accumulated to the funds of the more recent groups, so that in an old company under constant conditions, writing an equal amount of new insurance each year, the total of the insurance funds of all groups added together will remain constant. In a new company the accumulations will for many years exceed the decumulations, and the total funds in the hands of the company will grow, while in a company which is, or has recently been, doing an increasing business, accumulations will also exceed decumulations. Even if there is

INSURANCE FUNDS

FIG. 9. (A)—GROUP OF 1,000 WHOLE-LIFE POLICIES OF £1,000 EACH
AT PREMIUMS OF £18 PER ANNUM

(Based on assumed rates of Mortality and Interest)

Annual Receipts and Payments of Group (a) Annual Receipts from premiums (broken line) (b) Total annual receipts, including interest on insurance fund (solid line). (c) Annual payments for claims and expenses (broken and dotted line)

The vertical interval between the line representing total annual receipts and that representing annual payments indicates annual additions to the insurance fund (horizontal shading), or deductions therefrom (vertical shading)

In view of the heavy initial expenses, there is assumed to be no contribution to the insurance fund in the first year

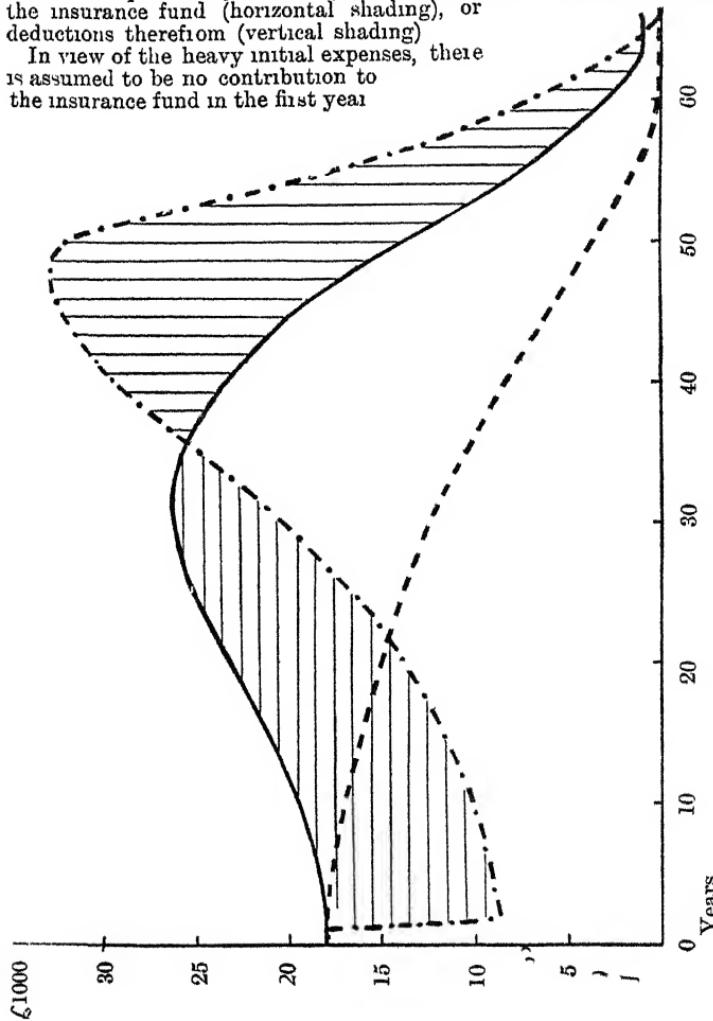
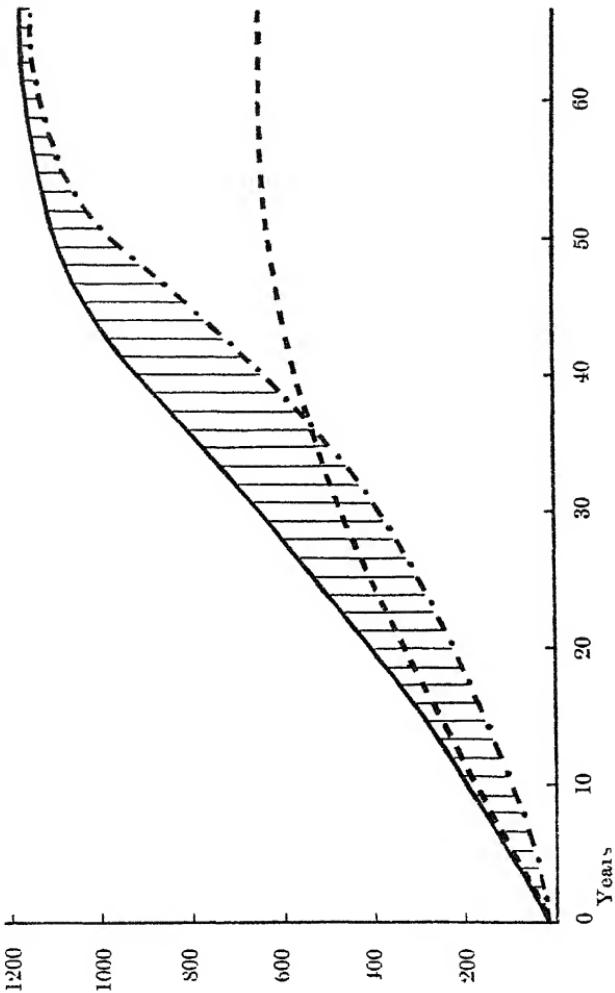


FIG. 9. (B.)—(GROUP OF 1,000 WHOLE-LIFE POLICIES OF £1000 EACH

AT PREMIUMS OF £18 PER ANNUM

CUMULATIVE RECEIPTS AND PAYMENTS OF GROUP

(a) Cumulative receipts from premiums (broken line) (b) Cumulative total receipts,
 including interest on insurance fund (solid line) (c) Cumulative payments for claims plus
 expenses (broken and dotted line)
 The vertical interval between the line representing total receipts and that representing
 payments (shaded area) indicates the amount of the insurance fund in each year



a falling off in new business, total funds will continue to grow for a time either if the company is a new one or if it has recently been doing an increasing business. Since most insurance companies have increased their new business very substantially during the last generation, it would take a large and prolonged decline in new business to compel them to deplete their insurance funds.

§ 8. The apparent permanency of life insurance funds led, in the early days of life insurance, to the widespread belief that their maintenance was not necessary, and their depletion, by large cash bonuses to policy-holders or by other means, brought about many bankruptcies. Similar misapprehension still gives rise to attempts to run mutual insurance societies on a level-premium basis but without an insurance fund. In its simplest form, such a society either collects, on the occasion of each death, a given equal sum from each member and hands over the proceeds, whatever they may be, to the representative of the deceased; or, alternatively, pays a fixed amount on each claim, collecting the necessary contributions, varying with the size of the membership, equally from each member. In either case such a system means that the contributions of the younger members are in excess of the value of the cover they receive, while the older members receive cover in excess of their contributions. If the scheme starts with a group of mixed ages, the older members get their insurance at less than cost, while the younger members pay excess contributions, which they get back in old age, without interest, only if meanwhile new

generations of young members have come in to pay for them. If the scheme starts with young members only, these will at first pay only the true cost of their insurance, which will be very small, while later, if new young members continue to join, they will pay less than the true cost of their insurance in old age. They will therefore during the whole of their lives pay less than the cost of the insurance cover they have received, the balance being found by the later-joined young members. If the society dies out, as it probably will owing to young men preferring to join newer groups of younger men with lower contributions or higher benefits, these later members of the group will never get their excess contributions returned to them at all.

§ 9. The only case where it might be possible permanently to conduct equal-premium life insurance without an insurance fund is where the insurance scheme is a comparatively unimportant incident of a group which is joined for other reasons. Such a group might, for instance, consist of all the employees of a particular firm. The older members would still receive their insurance below cost, the younger members would still lose the interest on their excess premiums, but new generations of young members would necessarily come along to take the place of the older members dying or leaving the group, and the age constitution of the group would remain approximately constant. Under such a scheme it is quite possible that the members would never realize its unfairness (which might still exist even if the employer paid the

premiums; for he would thus be giving a concealed relative increase in wages to those employees who were elderly when the scheme started). Even if the scheme were discontinued, and the younger later members of the group lost their excess premiums, it is possible that they would never realize that they had lost a great part of the premiums they had already paid.

§ 10. An incidental effect of the prevalence of long-term contracts in life insurance business, and of the consequent accumulation of great funds by the institutions providing life insurance, is that groups of small underwriters are in effect precluded from competing in this particular field. But for the large deposit required by the Board of Trade from all life insurance concerns, members of Lloyds could, of course, issue short-term life insurance policies, but the individual members and syndicates have neither the continuity nor the permanence necessary for entering into long-term contracts and holding great funds in trust for their policy-holders, while their small individual size would make it difficult for them to organize and spread their investments well enough to be able to compete with the great life insurance societies.

§ 11. Whether the anticipated profit on each group of policies is in fact earned will depend on the accuracy of the forecasts made when the premium rates were fixed. If mortality and expense rates are lower, or interest rates higher, than originally anticipated, the profit earned will be higher than expected; if the reverse, it will be lower. Since an insurance contract may remain in

force for sixty years or more, the possibility of error in forecasting would appear at first sight to be enormous. There are, however, several factors which tend to reduce the risk which an insurance company undertakes in fixing its premiums for without-profits insurance. In the first place, the trend of mortality rates has for more than a hundred years been consistently downwards, and there seems to be no reason to expect it to be reversed in the future. Any changes taking place in the rate of mortality are therefore likely to be in favour of the insurance company. The uncertainty with regard to future expenses is also mitigated by the fact that a large proportion of the total expenses incurred in connexion with a policy arise in the first year, so that only the relatively small remainder is liable to unforeseen change. The uncertainty regarding the future rate of interest can be reduced by making long-term loans at fixed rates to reliable debtors. The desirability of such a policy at all times is, however, subject to certain qualifications which will be considered later.

§ 12. There seems to be no theoretical reason why the risks inseparable from making long-term insurance contracts should not be borne—at a suitable remuneration—by the shareholders of the insurance companies. In practice, however, perhaps for the historical reason that much early life insurance was conducted on a mutual basis, and partly because a large section of the insuring public is desirous of participating in the business of risk-bearing in order to share in the expected profit, the greater part—in mutual societies, the whole—of

the risk of fluctuations in mortality, interest, and expense rates is borne by a special class of policy-holders, known as "with-profits" policy-holders. These pay a higher rate of premium than that charged on "without-profits" policies, so that if only the bare amounts assured were paid out, a substantial surplus would probably be left in the insurance fund of each group after all claims had matured. The size of this surplus would depend on the actual course of mortality, interest, and expense rates, but premium rates are fixed sufficiently high for some surplus to be left, even though claims and expenses were higher and interest earned lower than originally anticipated, this surplus would then be available for meeting the deficits on the without-profits groups. If, on the other hand, developments are more favourable than anticipated, not only will the surplus on the with-profits groups be larger than expected, but the surplus on the funds of the without-profits groups, which will become available for distribution, will be larger than expected. In mutual insurance societies the whole of such surpluses, or profits, are available for distribution to with-profits policy-holders, while in proprietary societies a fixed proportion (usually 10%) goes to the shareholders in dividends and the balance to the with-profits policy-holders.

The exact rate of premium paid on with-profit policies, so long as it is high enough to provide a margin for all reasonable contingencies, is really of comparatively little importance, for the higher the premium, the larger the profits to be distributed, though in proprietary companies an un-

usually high rate of premium means higher profits to shareholders as well as to policy-holders. In practice, however, insurers may hardly understand this, and might in any case earn higher interest on their excess premium charge in other investments while securing the same insurance cover more cheaply in another society. Competition therefore compels the various companies and mutual societies to charge rates of premium which are generally fairly similar.

§ 13 (It is, of course, impossible to wait until each group fund is finally wound up in order to ascertain the realized profits available for distribution, for by that time those entitled to participate will be dead, and many of their children after them. Insurance societies therefore carry out periodical "valuations" to ascertain the profits which have been earned in the preceding period, which may be anything from one to five years.)

In its simplest form, the principle of life insurance valuation is as follows (By means of the mortality tables an estimate is made of the sums payable in claims and annuities in each future year. These are then discounted back to the present day at an appropriate rate of interest, and the present value of future claims and annuities is thus ascertained. The present value of future receipts from the net premiums (premiums after deduction of the "loadings" added to provide for expenses and, in the case of with-profit policies, the necessary margin of profits) is similarly calculated. The excess of the former over the latter is the amount which should be in the life insurance fund if the society is

to be actuarially solvent. The actual assets of the fund are then valued, and the amount by which these exceed the sum actuarially necessary is available for distribution as profit.) This can be paid out in cash to with-profits policy-holders, as well as to shareholders, but is more commonly used as a single premium to pay for an addition to the amount originally insured under each with-profits policy. This addition is known as a "reversionary bonus". The additional insurance given in this way may be either with or without profits; in the latter case it is called a "simple reversionary bonus", and in the former a "compound reversionary bonus".

The simple principle outlined above is considerably modified in practice, as will be seen from the account of life insurance valuation in this country, given in the Appendix at the end of this chapter.

§ 14. Another difficulty which has been only partially overcome is that of the equitable distribution of the profits, in the form of bonuses, to the different "with-profits" policy-holders. The ideal method, of course, would be to calculate and distribute the profit separately for each homogeneous group, that is to say for each group of policy-holders of the same age who took out similar policies in the same year. The number of such groups would be very large, and even in the largest societies many such groups would contain too few individuals for the effective spreading of the risk. Partly for this reason, and partly for reasons of administrative simplicity, insurance societies are for the most part content to make no

more than the broadest of divisions, between life endowment and whole-life policies, and between endowment policies with different durations. Within each large division, each "with-profits" policy-holder shares on equal terms in the combined profits of all groups, even though the surplus earned in his own particular group may be greater or less than the average. This may on occasion involve considerable injustice, as, for instance, if profits fluctuate widely from one period to another in consequence of changes in the value of a society's investments for after the earlier policy-holders have had their bonuses cut during the period of investment depreciation, later-joined policy-holders share equally in the high bonuses declared during the subsequent period of improving investment values. Some societies have on occasion endeavoured to minimize such injustices by paying different rates of bonus to those taking out policies before and after a certain date.

§ 15 Another possible cause of inequality among successive groups of policy-holders lies in the distribution of the burden of expenses of obtaining new business. The cost of this would normally be placed upon the new policy-holder, whose business it was paid to secure, preferably by charging it to his first year's premium. It seems, however, possible that in some cases the cost of securing new business may be pushed beyond the point where the whole of it is borne by the new policy-holders. This is obviously not in the interests of existing with-profits policy-holders, except in so far as it brings them a reduction in

other costs per head. Even in mutual societies, however, it seems not unlikely that the personal interest of the managers and staff in securing the maintenance or expansion of the size of the concern for which they work may tend to induce some excess of expenditure on obtaining new business. In proprietary insurance companies there seems to be some definite conflict on this point between the interests of the existing with-profits policy-holders and those of the shareholders, for while the former are interested in maximizing profits per £100 of with-profits policies in existence, the latter are interested in maximizing total profits. It is, of course, unlikely that any excess of expenditure on obtaining new business will go so far as to have any serious effect on bonus rates, as it would then tend to defeat its own object. But it is not impossible that representatives of the shareholders might consider that a given sum would bring more business to the society if spent directly in agents' commissions or advertising than if used to pay for, say, another shilling on the bonus.

§ 16. To the individual policy-holder, the with-profits policy offers, in exchange for a constant annual premium, an amount of insurance which increases with advancing age, whereas, as we have seen, under a system of pure insurance the amount insured by a constant premium decreases with age, and under a without-profits policy remains constant regardless of age. With-profits insurance therefore contains a smaller element of pure insurance and a larger element of tontine investment than without-profits insurance, and in addition

bears the risk of fluctuations in mortality, interest, and expense rates. In return for the smaller amount of insurance cover obtained in the early years of his policy, and for bearing the risk of fluctuations, the with-profit policy-holder obtains the probability of receiving considerably increased benefits after the age of about fifty-five. In choosing a with-profits in preference to a without-profits policy, he is therefore betting firstly on living to a good age, and secondly on the accuracy, or rather the conservatism, of the company's estimates of future developments when fixing its without-profit rates of premium. It seems that the average member of the insuring public considers both these bets to be good ones, for the with-profits policies outnumber the without-profits policies in this country by something like four to one. It may, however, be noted that a heavy drop in interest rates, with its possible corollary of a fall in bonus rates, appears to bring a considerable increase in the demand for without-profits policies, so long as the premium rates on the latter are not raised.

§ 17. We are now in a position to commence our examination of the principal considerations which an insurance company has to take into account when arranging for the investment of its insurance funds. Since a company which is, or has recently been doing, an expanding business has each year a considerable addition to its insurance fund from the excess of premiums plus interest over current claims and expenses, it finds itself each year with cash in hand over and above its current requirements. It is therefore in a

naturally very liquid position, and could meet a very considerable exceptional increase in claims in any year merely by abstaining from new investment for a time. Even should new business fall away, its funds will continue to increase for many years, and so provide it with excess cash to meet abnormal demands. If it were not for a certain somewhat remarkable clause which is universal in insurance contracts, the need for liquidity in an insurance company's investments would be almost nil; but while the company continues to be bound by its contract throughout its whole term, the policy-holder has the right to break it at any moment. Should he do this, whether by notice or by discontinuing the payment of premiums, he does not forfeit his share of the accumulated insurance fund, but is given the benefit of it in one of two ways. It is either used as a single premium to buy for him a fully-paid policy of the same type as (though naturally of smaller amount than) that specified in the original contract, or it is paid out to him in cash. If he wishes to take the cash payment, or "surrender value", it will be somewhat smaller than his full share of the insurance fund. Otherwise it would pay the healthy policy-holders after a few years to surrender their policies and re-insure elsewhere (see p. 22). But in times of financial stringency, or if there are doubts as to the stability of the currency of the country or rumours as to the financial soundness of the insurance company, policy-holders may prefer to sacrifice this part of their share of the fund in order to obtain possession of the balance in cash. Under excep-

tional circumstances something like a "run" might develop, and the company might find difficulty in obtaining the ready cash with which to meet the demand for surrenders, without forcing the sale of some of its assets. This risk is obviously greater where the "fine" for surrender is small than where it is large.

Another clause in many policies which might have very similar results is that which gives policy-holders the right to obtain from the company a loan at a fixed rate of interest up to nearly the whole of the surrender-value of their policies. This provision is very useful to policy-holders, and may often provide the society with a valuable investment channel, but it might, in exceptional circumstances such as those mentioned above, give rise to such a demand for policy-holders' loans as to exhaust the company's supply of investible cash and compel it either to realize some of its existing investments or to borrow from outside.

§ 18. In spite of these possibilities, the degree of liquidity needed in the investments of a life insurance society appears to be immensely less than that required in the investments of such an institution as a bank, and if, in addition to the supplies of free cash continually arising from the growth of the insurance fund, the society makes available a further supply by arranging for a small percentage of its investments to mature each year, the supply would appear to be sufficient to meet all normal requirements, especially if surrender values are kept low. It might well be worth while for an insurance company to charge somewhat lower

premiums if thereby it could reduce its surrender values without losing business; for by reducing its need for liquidity it could probably increase its interest yield.

If in the matter of liquidity an insurance company can afford to be comparatively unexacting, the position is very different with regard to the yield of its investments, for on the long-term yield, that is to say, interest earnings plus capital appreciation minus capital depreciation, depends its ability to earn enough to cover its expenses and contract liabilities, and to pay the bonuses expected by its with-profit policy-holders, as well as the dividends of its shareholders. It is true that the wide latitude offered by the power to reduce bonuses makes it difficult, though of course not impossible, for a life insurance society to go actually insolvent, but reductions in bonuses and dividends are naturally regretted by policy- and shareholders; while if the lower rates of earnings are confined to certain companies, the resultant lower bonuses will cause a transfer of business to other companies, and this, while not affecting existing policy-holders, is naturally not desired by either shareholders or staff. The difficulties which managers of life insurance societies have to face in their task of maintaining an adequate surplus of earnings over claims plus expenses in the fluctuating conditions of the modern world are considered in later chapters.

AND THEIR INVESTMENT

APPENDIX

METHODS OF LIFE INSURANCE VALUATION IN USE
IN THE UNITED KINGDOM

*Based on information for which we are
indebted to*

MR NORMAN PLANT, F I A

IN order that this aspect of the subject may be considered in its simplest form, it has been assumed for convenience that the policies to be valued are whole-life policies, subject to annual premiums payable throughout life.

By means of prepared functions based on the rates of mortality and interest assumed for the purpose of the valuation, the present value of £1 payable on the death of a life of a given age is easily ascertained. If the whole-life assurances in force on the valuation date are grouped according to the attained ages of the lives, and the total amount at risk at each age is multiplied by the appropriate valuation function, the result is the present value of the sums assured, and existing bonuses in the case of the with-profits policies, for each age-group. Adding together the amounts for each age-group gives the total present value of the sums assured and bonuses.

The present value of an annuity of £1 per annum, payable throughout the remainder of the lifetime of a life of a given age, can also be ascertained from prepared functions calculated on the same bases as to mortality and interest as were used for calculating the value of the sums assured. If the total "net" premiums (i.e. the theoretical premium calculated on the valuation basis, with no "loading" for expenses or bonuses) payable in respect of each age-group is multiplied by the appropriate valuation function, the result is the present value of the future net premiums receivable in respect of each group, and by adding the results for all age-groups the present value of the future net premiums to be received in respect of all the lives on the books is ascertained.

By valuing the net premium only, a definite reserve is thus made for future expenses.

If the present value of all future net premiums is deducted from the present value of the sums assured, the result represents the amount which the office must have in hand as a reserve. This is termed the "Net Liability".

The securities in which the assurance fund is invested are then valued, and the difference between the value placed on the securities and the net liability gives the surplus or deficit.

As the office premiums for the with-profits policies contain a "loading" for bonus, the effect of valuing a net premium which ignores this loading is that the amount which the office actually has in hand at a valuation, as revealed in the assurance fund, is in excess of that which the valuation shows

to be necessary, and a surplus is disclosed. In the past this surplus was distributed in whole or in part amongst the with-profits policy-holders as a cash bonus. This method of valuation is known as the "Net Premium Method".

Until the end of the nineteenth century, the method worked very well, but with the advent of a new mortality experience, coupled with a drastic fall in the rate of interest, it was found necessary to revise the bases. Revised valuation net premiums were calculated on the new mortality tables and at a lower rate of interest, usually 3%, but in some cases $2\frac{1}{2}\%$. The office premiums which had been charged in respect of existing policy-holders could not, of course, be altered, and as the new net premiums were higher than those which had previously been used, one of the results was that the margin for expenses was much smaller, and in some cases it had disappeared altogether. As the reserves brought out by the new valuation basis were higher than before, the effect of the change was to strengthen the position of the offices, although the incidence of the constituent parts of the reserves, due to loading, interest, and mortality, had all been altered.

The increase in the reserves meant a decrease in the surplus revealed at the valuation, as compared with the surplus which would have been revealed had the old valuation basis been used. This suited the offices very well, as a demand had been growing for the bonuses to be declared in the form of reversionary additions to the sums assured rather than as cash bonuses. In order to provide a con-

stant reversionary bonus at each valuation it is necessary for the equivalent cash bonus to increase. This is obvious if it is remembered that the cash bonuses are single premiums for additional assurances on the life of the policy-holder and that the single premium for a constant amount of sum assured increases with an increase in the age of the policy-holder. It was found that the reserves brought out by the new basis very conveniently released the surplus in such a manner as to support a constant reversionary bonus.

It is clear from what has gone before that one of the determining factors affecting the size of the surplus revealed at a valuation is the basis used for valuing the policies. The valuation basis cannot itself affect the amount of the profit earned, but it does affect the manner in which the profit is revealed. A stringent valuation basis has the effect of holding up profit in the early years and releasing it in the later years. If the rates of mortality and interest assumed for the valuation were those which had been assumed for the purpose of calculating the office premiums, then the surplus revealed would constitute true profit. In practice, however, the basis used for a net premium valuation is not the same as that used in the calculation of the premiums, and the resulting surplus does not, therefore, constitute true profit. Although the method is now largely an artificial one, divorced from the facts, it is still used by almost all English life offices for the purpose of their published valuation returns.

For the guidance of the management, and for a

truer appreciation of the position of the office, many offices make a further valuation. The mortality assumed for the valuation functions is based on the rates actually being experienced by the office, and the rate of interest employed is that which the office considers can be maintained in the future. The office premiums actually being received are valued, less a proportion thrown off for expenses. The sums assured and existing bonuses are valued, and, in addition, a future rate of bonus, which the office considers can be earned, is treated as a liability and valued as such for all with-profit policies. Care has to be taken to see that, in any individual case, a larger value is not placed on the future premiums than is placed on the sums assured and bonuses. It is essential to eliminate any such cases and treat the net liability as zero; otherwise, if this were not done, the office would be treating the policy as an asset. This would be unsound, in view of the policy-holder's right at any time to cease payment of premiums.

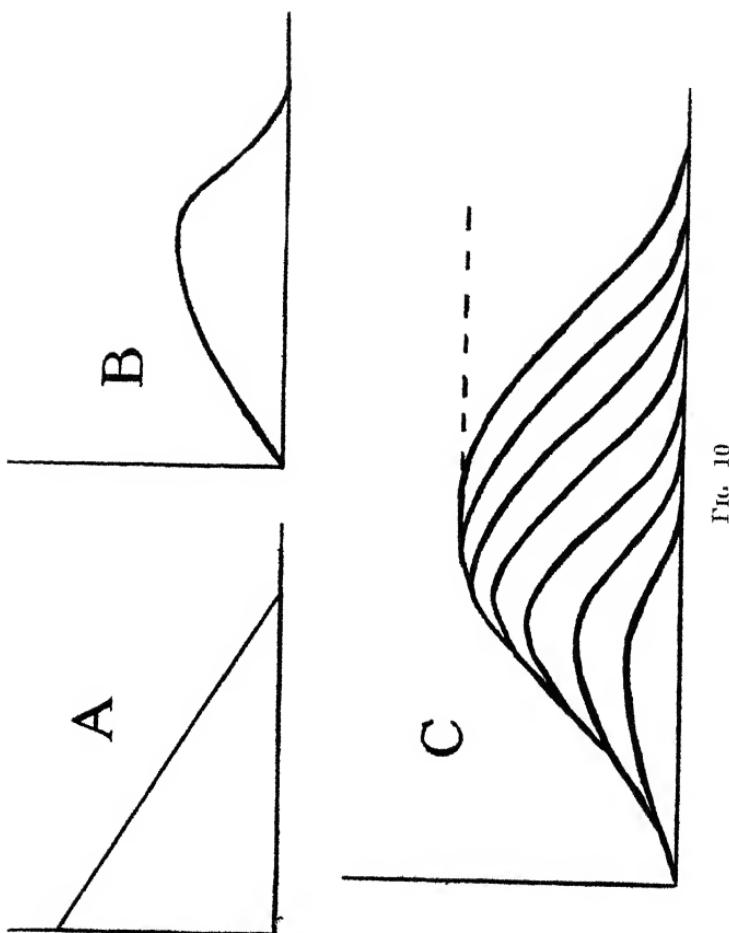
This method of valuation is known as the "Bonus Reserve Method."

CHAPTER IV

SURVEY OF INSURANCE OFFICE INVESTMENTS

§ 1. It has been shown in the previous chapters that, with a succession of entrants into insurance contracts, the fund held by the insurers against future liabilities assumes a permanent character; and that while it must always be earmarked as a definite liability, the necessity of employing it to discharge the liability may be indefinitely postponed. This feature of a permanent or quasi-permanent fund is, of course, not peculiar to insurance. It occurs whenever payments are made in advance, and the contributors, subscribers, or whatever they may be called, enter into the transaction, not simultaneously, but successively. If a telephone or electricity concern insists as a condition of supplying the service that the consumer must make a deposit of, say, £1, the deposits so received will constitute a fund which, like the widow's cruse, may never run dry. As one subscriber leaves the district or relinquishes the service and requires repayment of the deposit, another is likely to take his place and replenish the deposit fund. Banks are notoriously in the position of depending on the rough balancing of inflow and outflow of deposits to leave the total resources at their command fairly constant.

But, in these examples, there is always the remote possibility that the liabilities represented by the fund may have to be discharged immediately. In theory, and unfortunately not seldom in practice, a bank may be called upon to repay the whole of its deposits. The whole, or a great part, of the subscribers to a telephone service might decide to discontinue their subscriptions at a time when new subscribers were not forthcoming to replace them. We can suppose that, in this example, the terms of the original agreement provided for three months' notice of discontinuance. In this event, the business would have preliminary warning and an interval in which to realize the deposit fund, and the longer this interval the less liquid need be the investments constituting the fund. Hence, the longevity of the fund, which arises out of the influx of new business to replace expiring business, is further prolonged by the nature of final liquidation, when new business ceases to come forward. This is particularly the case with life insurance, where the final liquidation extends over a long period of years. Life insurance may therefore be regarded as the extreme case of the accumulation of funds as a result of payments in advance, with the additional complication that the payments themselves are usually made in successive instalments. Thus, the individual group surplus which, in the simplest form of a subscription in advance, takes the shape *A*, is flattened to produce the shape *B*, and the accumulation of successive group surpluses assumes the form *C*. (FIG. 10.)



§ 2. If we assume that, after the preliminary stage of growth, a life insurance business settles down to what may be called stability, where new entrants steadily replace expiries, then the annual or periodical flow of receipts and payments and the accumulated fund may be represented as follows : (FIG. II.)

(In such a case, the flow of receipts from premiums and interest payments suffices to meet current payments for claims, expenses and profit distributions, and the accumulated fund remains intact. If business is continually expanding, or if "stability" is achieved, there will be no need to encroach upon the accumulated fund, and it can be invested in the light of that prospect.) Indeed, as a result of the pressure of competition between the independent insurance concerns, the fund must, in normal times, be invested in a form which corresponds with its duration over time, since interest-earnings are an important factor in the flow of receipts.

If the total of receipts entering into the periodical revenue account exceeds current outgoings (including profit distributions), a margin will remain which will go to swell the fund; if the outward flow exceeds the inward flow of payments, encroachment will be made upon the fund—that is to say, disinvestment takes place. Hence, in the conduct of insurance business, a conscious or unconscious forecast is made of future developments in the movement of premiums, interest-earnings, expenses and claims; and, independently of such movements in the revenue items, regard must be

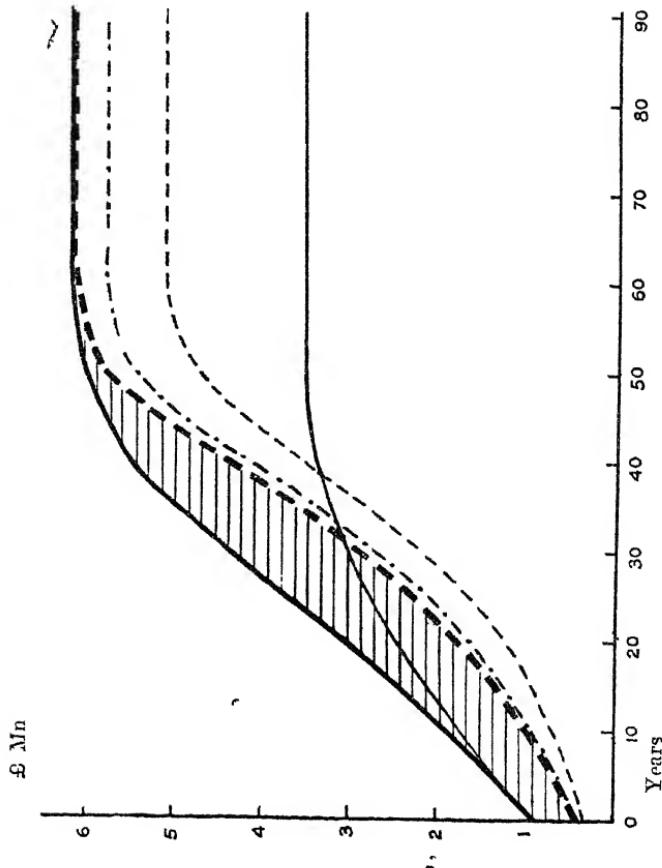
INSURANCE FUNDS

FIG. 11

ANNUAL RECEIPTS AND PAYMENTS OF LIFE INSURANCE OFFICE
 (Based on assumed rates of Mortality and Interest)

(a) Annual premium receipts (thin solid line) (b) Total annual receipts, including interest (thick solid line) (c) Annual payments on account of claims (thin broken line) (d) Annual payments on account of claims plus expenses (thin broken and dotted line) (e) Total annual payments, including profits (thick broken line)

The vertical interval between lines (b) and (e) (horizontally shaded area) represents the amount added annually to the insurance fund



had to the problem of the maintenance of the value of the accumulated fund.

Long experience has resulted in increasing refinement in the calculation of future developments in the major items of the revenue account—i.e. claims, expenses, interest-earnings, and premiums; and in any case a safety margin can be allowed to cover normal fluctuations. But, as a result of competition and legislation, two items have entered into the revenue account of life insurance which afford much less scope for calculation in advance. One of these items arises out of the concessions made in respect of surrenders. At one time failure to keep up premium payments entailed complete loss of previous payments. Some return had already been made in the form of cover while the policy was in force, but the accumulated fund standing to the credit of the holder was forfeit. Nowadays, in respect of contracts which constitute the bulk of life insurance business, the insured person is entitled, after a comparatively short period, to recover a considerable portion of the fund accumulated against the future risks of his case. This introduces the contingency of a cash demand on a large scale, the occasion for which it is difficult if not impossible to foresee. Some critics assert that this privilege converts a true life insurance business into a pseudo bank of deposit, and would restrict the surrender concession to the substitution of a paid-up insurance.

The other item of a highly incalculable nature is the concession of the right to obtain loans on a policy. From an accounting point of view this is

not an item affecting the revenue account, since such loans are regarded as investments and appear as assets in the balance sheet. But if the concession is granted as a right, it gives rise to a form of compulsory investment for which there may be no available balance in the revenue account. That is to say, there may be a cash demand which cannot be met out of current revenue, and therefore necessitates drawing upon the fund. To sum up, we have the following picture of the situation in any period. The surplus or fund stands above the revenue account receiving or making good any balance on the periodical flow.

SURPLUS

Periodical Inward Flow	Periodical Outward Flow
Premiums	Claims
Interest (less tax)	Expenses
	Surrenders .
	Loans .
	Dividends and ,
	cash bonuses .

§ 3. It is convenient at this point to examine the character of the accumulated fund of life insurance concerns in two important countries—the United Kingdom and the United States. The two chief considerations determining the nature of the fund are the necessity of earning a minimum rate of interest, and the necessity of maintain-

DISTRIBUTION OF ASSETS OF ASSURANCE COMPANIES
ESTABLISHED WITHIN GREAT BRITAIN
(Compiled from Statements deposited during year ended
December 31st, 1931)

	Life Assurance Companies	Other Assurance Companies Percentage of Assets
3 Mortgages .	13 1	4 0
Loans on Public Rates, Municipal and County Securities, Public Boards (U K.)	4 8 ✓	1 3
Loans on Policies and Personal Security	6 3	—
7 British Government Securities	19 4 ✓	18 9
4 Indian and Colonial Government, Provincial and Municipal Securities .	7 6 ✓	5 4
Foreign do	6.9 ✓	10 9
2 Debentures .	17 1	18 9
Stocks and Shares, Pref and Guaranteed	6 8	5 4
Stocks and Shares, Ordinary	7.1	5 4 ✓
Land, House Property, Ground Rent, Office Furniture, etc	4 6	6 8
Life Interests and Reversions	0.6	—
Agents' Balances, Outstanding Premiums, Outstanding and Accrued Interest	3 9	14 9
Cash and Stamps .	1.7	6 8
Establishment Expenses, Purchase of Business	0.2	1 3
	<hr/>	<hr/>
TOTAL ASSETS £MN .	1218	74
	<hr/>	<hr/>

DISTRIBUTION OF INVESTMENTS OF FIFTY-TWO RESERVE
LIFE INSURANCE COMPANIES

(holding more than 90% of admitted assets of all U.S.
legal reserve companies)

	Assets	Percentage of Total Admitted	
	1931	1932	
Farm Mortgages	9 9	8 8	
Other Mortgages .	<u>28 5</u>	<u>27.5</u>	
TOTAL MORTGAGES	38 4	38.4	36 3
U S. Government Bonds	¹⁹ 1 9		2 1
State, County and Municipal Bonds	3 8	3 8	
Canadian Government Bonds .	2.4	2 4	
Other Foreign Govern- ment Bonds	<u>0.2</u>	<u>0 1</u>	
TOTAL GOVERNMENT BONDS	8.3	8 4	
Railroad Bonds and Stocks	16 2	15.6	
Public Utility Bonds and Stocks	9.8	9 6	
Other Bonds and Stocks	<u>3.2</u>	<u>3 2</u>	
TOTAL PRIVATE BONDS AND STOCKS	29.2,	28.4	
TOTAL BONDS AND STOCKS . .	37 5	36 8	
Policy Loans and Premium Notes .	16.4	18.4	
Real Estate ..	2 8	4.0	
Collateral Loans	0.1	0 1	
Cash . .	• 0 8	1.0	
Other admitted assets	<u>4 0</u>	<u>3 4</u>	
TOTAL ADMITTED AS- SETS OF ALL U.S. COMPANIES (Mn.\$)	100 0	100 0	
	20159	20750	

BRITISH GOVERNMENT SECURITIES AS PERCENTAGE OF INVESTMENTS

1871	7 5	*1921	.	35.2
1890	2 9	*1926	.	31.3
1896	2 0	*1930	.	22.2
1907	1 5	*1931	.	23.9
*1913	1 4	*1932	.	24.2

* Twelve representative companies

A. H. Bailey's particular objection to Government securities was that they were subject to very inconvenient fluctuations in value. His strictures, however, related to a period when the only British Government securities available were of the irredeemable class. The whole position was altered by the enormous expansion in the volume of British Government securities as a result of the War, and by the persistence in the high yield on these securities up to a very recent date. Instead of the single choice of an irredeemable stock, the gilt-edged list offers a wide choice of securities of a short- and long-term character. It should be noted that for neither country does the list give any indication of the term of the investments and subsequent analysis will show that the allocation between short- and long-term securities at any particular moment is of considerable importance and a matter of weighty decision. It can be assumed, as well as demonstrated from companies which do give such information, that a fair proportion of the investments are of a short maturity, and that, as a result, the liquid funds accruing through the

revenue account are continually supplemented by maturing investments. A redeemable Government security with a comparatively high yield is an attractive investment for an insurance concern, and the great increase in the post-War holding of gilt-edged by British concerns is readily explained. As will be seen later, the striking change introduced by the conversion operations of the British government has created a new problem for insurance investment. In the case of the U.S.A., the post-War period was marked by a steady and considerable reduction in the volume of Government indebtedness, and also by comparatively low yields on the bonds, rendering them unattractive for insurance investment. Again, as a result of recent events which suggest an expansion of Government debt and possibly higher yields in the future, the investment policy of insurance concerns in that country may undergo a change in respect of gilt-edged holdings.

Two main classes of assets go to make up the preponderating part of the investments—mortgages and Stock Exchange securities. In the United States list the percentages are practically the same, and although the mortgage item in the United Kingdom list is now relatively small, less than forty years ago it represented a larger percentage than the Stock Exchange security group.

UNITED KINGDOM

	Proportion Borne to Total Assets by Stock Exchange	
	Mortgages %	Securities %
1888	40	28
1893	37	31
1898	29	39
1903	26	42
1908	24	40
1913	21	45

The relative expansion of the Stock Exchange securities group at the expense of the mortgage group is also characteristic of the development in the U.S.A. Representative figures for that country show the same displacement of the latter group from the position of priority. The post-War expansion of the mortgage item in the U.S.A. is almost solely attributable to the boom in urban real estate.

UNITED STATES OF AMERICA

	Proportion Borne to Total Assets by							
	1874	1890	1907		1911	1921	1931	1932
Mortgages	%	54	40	30		32	34	38
Bonds and								36
Stocks	%	17	35	47	:	46	46	37
								37

The change in favour of the Stock Exchange security investments is, to a large extent, technical rather than real. The growth in the size of firms and institutions has entailed a corresponding growth in capitalization, and the type of borrow-

ing which was formerly of a private character now takes the form of a public issue. Hence the mortgage has become a debenture, widely distributed as an easily marketable security. A paradoxical situation arises out of the choice between a mortgage loan and a security holding. A direct secured loan of, say, £100,000 at 4% to a municipality or institution retains its face value for valuation purposes regardless of fluctuations in the rate of interest or, until a definite default, in the standing of the borrower. The market value of £100,000 worth of 4% bonds issued by the same borrower would prove highly sensitive to movements in interest rates and to changes in the reputation of the borrower, and the fluctuations in capital values might give rise to awkward problems of valuation. Another paradox of investment which emerges during depressions and times of stringency is that bonds which do not enjoy a good market fall less in price than the more sensitive marketable bonds, and thus securities which, while good, are not on the usual standards regarded as the best of their class, may by an anomaly prove more desirable in practice.

As a set-off to the stability of mortgage values, there is the possibility of appreciation in the value of Stock Exchange securities; and it can also be argued in favour of the latter that there is greater ease and less expense in acquiring, managing, and realizing them. There is the further advantage that they can carry a longer term of life than is usually associated with mortgages. On behalf of mortgages it is claimed that they involve no greater trouble in

practice, and it is asserted that a higher yield is obtainable. Also, the mortgage transaction leads to insurance business.¹

¹ The purely life office is not in a favourable position in this respect as against composite offices

CHAPTER V

INVESTMENT POLICY IN A CHANGING WORLD

§ 1. It has been seen that the operation of insurance business depends upon the course of various factors, possibly over a very long series of years. Any marked divergence from the expected course of any factor may give rise to serious difficulties and prevent the fulfilment of the contract. On the other hand, an unexpected divergence may facilitate the insurance operation, and divergencies in the case of one factor may be offset by divergencies in another. It is true that a fairly wide margin of safety can be allowed, but this is limited by the competition between individual insurance concerns. Moreover, both short-term fluctuations and long-term changes offer scope for skilful or fortunate management, and advantages secured in this way by any one concern strengthen its hand in relation to other concerns, and enable it to set the pace in the matter of premium and other concessions. A useful method of illustrating the operation of the various forces is to take a definite period of history and trace the actual developments. Some periods have been remarkable for their stability, and at such times those concerned with financial problems have a comparatively easy task. Such a period was in the mind of Bagehot when, in his

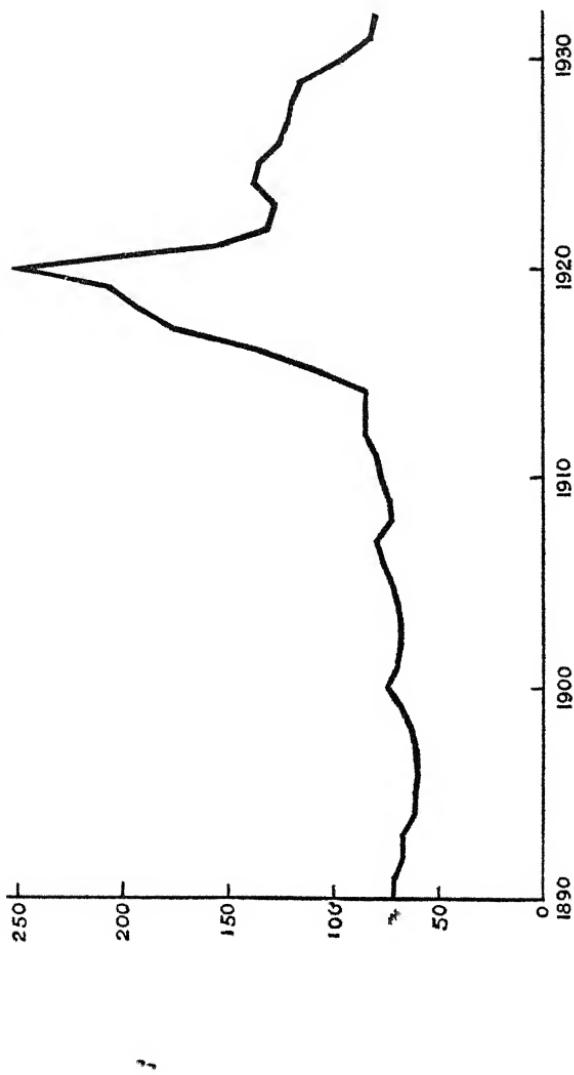
classic book *Lombard Street*, he described the fortunate position of the London banker at a certain epoch. "Banking", he said, "is a watchful but not a laborious trade. A banker in a large business can feel pretty sure that all his transactions are sound and yet have much spare mind. A certain part of his time and a considerable part of his thoughts he can readily devote to other pursuits. There has probably very rarely ever been so happy a position as that of a London private banker and never perhaps a happier."

This description is certainly not applicable to the epoch which is to be used for our illustration, namely the last forty years, which carries us up to a moment when a bank or any other financial institution cannot feel sure that any of its transactions is sound. Some life insurance contracts entered into in, say, 1890 are still running. These obligations were assumed on the basis of certain calculations as to the movement of interest-earnings, expense items, and the other factors which have been previously detailed. An examination of a few economic indices associated with these factors will show the environment in which these contracts of the '90's have worked.

§ 2. A representative index in this respect is the course of commodity prices. The diagram opposite shows the movement of the wholesale index in the United Kingdom over the period in question.

Such an extreme movement in the price index is, of course, associated with similar violent fluctuations in nearly every branch of economic life, and

FIG. 12.
BRITISH WHOLESALE PRICE INDEX ("STATIST") 1890-1933
AVERAGE PRICES 1867-77 = 100



by itself indicates that financial operations over the period must have been subject directly or indirectly to unexpectedly diverse influences. In some countries the price movement was even more extreme, and in a few cases—e.g. Germany—attained the fantastic. A direct effect on insurance business must occur in the matter of expenses. The remuneration of the staff, for example, must have been on a much higher level in 1920 compared with what was considered adequate in the '90's. Thus the "loading" for expenses allowed in the original contracts was probably insufficient for, and in many cases inappropriate to, the cost of running the business in later years. The effect of such a change in the expense item is overwhelming when, as in the case of Germany, the cost of a postage stamp on correspondence becomes greater than the whole capital sum involved in the insurance contract. If business continues in the face of large increases in the expense item, it must be because other forces have compensated for the change, or (and this is important) because other groups of contracts in time are called upon to make up any deficiency.

§ 3. The course of interest rates is not only representative of general movements but is also of direct and immediate effect on insurance operations. An index of short-term interest rates is afforded by the Bank rate. The beginning of our period found this at 2% and, happily for the illustration, the rate now stands at the same level for the first time again in the period. In the interval it has touched 10%, and the movements of recent

years show how rapidly the situation in the money market can change.

BANK OF ENGLAND DISCOUNT RATE

1927	4½ %	1931	2½ %
1929	5½		3½
	6½		4½
	6		6
	5½	1932	5
	5		4
1930	4½		3½
	4		3
	3½		2½
	3		2

An index of long-term interest rates is afforded by the price of old Consols. Again the changes have been to a measure which must have exceeded any calculations or allowances.

YEARLY AVERAGE PRICE PER £100 OF 2½% CONSOLIDATED STOCK OF U K

1890	96	1900	99	1910	81	1920	47	1930	.55
1891	95	1901.	94	1911	79	1921	48	1931	.57
1892	96	1902	94	1912	70	1922	56	1932..	67
1893	.98	1903	90	1913	73	1923	57	1933	74
1894	.101	1904	88	1914	—	1924	57		
1895.	.106	1905	90	1915	65	1925	56		
1896	.110	1906.	88	1916	58	1926	55		
1897	.112	1907.	84	1917	54	1927	55		
1898	.110	1908	80	1918	57	1928	56		
1899	.107	1909	84	1919.	54	1929	54		

It will be seen that an investment in Consols of the instalments of the fund on an insurance con-

tract of the middle '90's would have lost half its value within twenty years. In the absence of any compensating movement or of exceptionally large reserves, whether actual or potential in such form as heavy with-profits "loading", such a development might result in the bankruptcy of the insurance concern.

§ 4. The dominating event of the period was the Great War. This brought in its train consequences which largely determined the course of the indices already considered, but also entailed more direct effects on insurance business. One obvious effect is the distortion of the mortality experience, since younger and healthier individuals are more subject to the hazards of war. Another effect is that the rise in interest rates inevitably associated with wartime finance does not represent an equivalent increase in earnings from investment, since increased taxation may more than offset the gain and, indeed, constitute a grave threat to solvency.

The War also brought about a collapse of the Gold Standard over the greater part of the world, and the stable exchanges of the pre-War period gave place to a riot of fluctuating currency values. This entailed special difficulties in the conduct of insurance business of all kinds across national boundaries, and gave rise to problems which constitute a special chapter in insurance history.

The end of the period finds the world still in the throes of a depression of unprecedented severity. The detailed analysis which follows will show how gravely insurance interests have been threatened

by the prolonged dislocation of economic affairs, and what precautions and assistance have been necessary to protect them. It cannot be said at the moment of writing that the danger is yet past.

§ 5. A broad survey of the period in its special reference to insurance finance should not omit to consider the industrial and social changes which in any four decades would considerably alter the complexion of business affairs, and in the period under question have proceeded at a particularly rapid rate. Broadly, the period has been one of social and commercial development favouring a continued expansion in insurance business, especially life insurance, as the following tables show.

UNITED KINGDOM LIFE INSURANCE STATISTICS

	Sums Assured, and Bonuses		
	Ordinary £Mn	Industrial £Mn	Assets £Mn
1888	442	86	195
1895	601	173	289
1908	768	286	429
1913	855	429	530
1920	1063	636	734

This expansion, entailing a continued growth of premium income, has facilitated the problem of liquidity and furnished a growing fund for investment. At the same time, as a result of economic changes, hygienic progress, social legislation, and other factors, the mortality experience has progressively worked in favour of life insurance business, apart from the annuity side.

The industrial changes have a particular im-

portance from the point of view of investment. The investment tables previously given show the significance of industry as a field for the investment of insurance funds, and it should be remembered that the great development of State and municipal enterprise characteristic of the period has been responsible for a large increase in public borrowing and that therefore investments in public and semi-public securities also represent participation in activity of an industrial character. With the rapid changes of industrial technique and structure, investments which depend upon the fortunes of particular industries call for continual vigilance and foresight, lest the holders should be left with a depreciated or even valueless security. An apt illustration is afforded by the case of the railways. To the nineteenth-century business world the railway appeared as an unchallengeable and permanent form of transport. This notion of permanence was reflected in the issue of irredeemable debentures and in the high status enjoyed by railway securities. These securities appeared eminently suitable as an investment for insurance funds, and in 1906 35% of the assets of fifty-two leading life insurance companies in the U.S.A. were represented by railroad bonds and stocks. The whole situation, however, has been radically altered by the advent of mechanical road transport, and the embarrassment caused to the railways by this new and in many ways more convenient form of transport is notorious. Other forms of transportation have experienced similar difficulties. In a discussion of investment trends with particular reference

to insurance finance, W. A. Law¹ gives an interesting example of security depreciation due to transport changes. In 1903 the equity of an electric street-railway (what is called a tramway system in England) with a bonded indebtedness of \$1 Mn. fetched \$800,000 in the market. Net earnings exceeded twice the bond interest. Another \$1 Mn. raised by junior liens was spent in developing and improving the property which throughout enjoyed honest and capable management. In 1931 it was impossible to obtain a bid for the first mortgage bonds of the Company, since it was barely earning its operating expenses. The travelling population had switched over to the automobile, and it is doubtful if \$50,000 can be realized from the assets. Another outcome of the growth of automobile traffic is the great expansion in road construction, which has entailed a large increase of indebtedness on the part of local authorities, thus affording a widening outlet for the growing funds of insurance concerns. Such changes as the development in the utilization of electric light and power have given rise to new public, semi-public, and private enterprise, introducing a fresh group into the investment list, and diminishing the relative importance of earlier groups. How radically such changes allied with other developments can alter the distribution of investment is shown by a comparison for the U.S.A. between the situation in 1906 and that of 1929.

¹ *Investment Trends and Traditions*, W. A. Law — Speech delivered at the Convention of the Association of Life Insurance Presidents at New York, December 1931

INSURANCE FUNDS

INVESTMENTS AND RESERVES OF FIFTY-TWO LEGAL
 RESERVE LIFE INSURANCE COMPANIES, (HOLDING
 MORE THAN 90% OF ADMITTED ASSETS OF
 ALL U S LEGAL RESERVE COMPANIES)

	1906		1929	
	Amount \$Mn.	%	Amount \$Mn	%
Total Mortgages	821	28.5	6747	42.0
Public Bonds	194	6.8	1267	7.9
Railroad Bonds and Stocks	1002	34.8	2849	17.7
Public Utility Bonds and Stocks	134	4.7	1450	9.0
Other Bonds and Stocks	107	3.7	416	2.6
Policy loans	255	8.9	2140	13.3
Real Estate	156	5.4	345	2.2
Collateral loans	52	1.8	21	0.1
Cash	65	2.3	118	0.8
Other Assets	91	3.1	709	4.4
	2924	100.0	17,482	100.0

CHAPTER VI

INVESTMENT EXPERIENCE IN THE PERIOD 1890-1929

ANALYSIS of the investment experience of the past forty years is facilitated by separate study of convenient divisions of the period.

1890-1914

§ I. DEPRESSION AND RECOVERY.

The earlier years of this pre-War era were marked by depression, and the subsequent development is of particular interest at the moment, since the depression of the early '90's had certain features in common with the current depression, and the sequel may provide lessons of the greatest significance. After the middle of the '90's the depression yielded to an era of almost uninterrupted expansion. The fall in commodity prices ceased and was replaced by a steady upward trend. A quarter of a century was to pass before people re-learned the meaning of deflation. The rise in prices up to the War must have worked adversely in respect of expenses, but the general prosperity associated with (some people would say caused by) rising prices favoured a continued expansion of insurance business which easily absorbed any increase in working expenses. A more acute problem was created by the continuous rise in interest rates after the turn of the depression. As illustrated by the table (p. 77) showing the movement in the price of Consols, this was reflected by a heavy fall in the price of fixed-interest secur-

ties. Thus the type of investment favoured by insurance concerns steadily depreciated in value, and losses had to be written down or covered out of reserves. The following figures for British life insurance companies show the effects of this development in interest rates

WRITING-DOWN OF INVESTMENTS	
	£Mn
1899-1903	1 4
1904-1905	3 3
1909-1913	5 6
	—
	10 3
	—

In addition £6 3Mn. were allocated to reserves to cover depreciation. The analogy with the present outlook will be discussed in the last chapter.

Some setbacks were experienced during the general wave of prosperity, the most serious being in 1907. The crisis in the U.S.A. that year was severe enough to cause embarrassment to insurance business. The depreciation of bond values was such that valuation concessions had to be made. The device was adopted of permitting the average of thirteen quotations (1st of each month, and that of Dec 31st, 1907) to be calculated for balance sheet purposes. The current depression has seen the widespread use of such devices.

1914-1920

§ 2. THE WAR PERIOD¹

A conference meeting in 1909 and discussing the

¹ For an account of the war-time experience we are greatly indebted to the book *War and Insurance*, Carnegie Endowment

outlook for insurance transactions had some justification for not repudiating a prophecy that the future course of interest rates would be downward.¹ The catastrophic event of the War was outside all calculations, and the years subsequent to 1914 were to impose a severe trial on insurance. The experience of British life insurance companies illustrates the magnitude and complexity of the new problems created. These problems arose out of such developments as the enormous increase in commodity prices, the great rise in interest rates with the corresponding fall in the value of existing fixed-interest securities, the increase in taxation, the increase and distortion of the mortality-rate, and the impact of Government intervention.

§ 3. Rise in Commodity Prices

To deal with these phenomena in turn, the huge rise in commodity prices brought about a large increase in expenses. Apart from the fact that the companies had generously continued to pay the salaries of members of the staff on active service, the working staff retained and the emergency staff had to be compensated for the rise in the cost of living. Most other expenses were involved in the upward rush of prices, and there is no doubt that the loading on earlier contracts became inappropriate.

§ 4. Rise in Interest Rates

The rise in interest rates in this period affords an illuminating example of the working of this vital

¹ See Proceedings of the 6th International Congress of Actuaries, 1909

factor in insurance finance. Remunerative investments became easier to find, but the yield was eaten into by taxation. In fact, the increase in the latter completely neutralized the increase of earnings from interest, and the net yield was brought perilously near to that on which earlier valuations were founded. It may not be generally realized that taxation pushed beyond a certain extreme could reduce life insurance concerns to insolvency, a process which could not happen in any other line of business.

The rise in interest rates had a marked adverse effect upon the funds of life insurance. A very large depreciation had to be faced, as can be seen by the following figures for amounts written off:

	£Mn
1914	1 8
1915	4 8
1916	2 9
1917	3 4
1918	2 7
1919	3 4
1920	8 5
	<hr/>
	27.5
	<hr/>

In addition to the writing off of £27½ Mn., investment reserves had to be increased over the period to the extent of £11 3 Mn.

§ 5. *Claims Experience*

The claims experience was adversely affected by the premature deaths of good lives, and it is calcu-

lated that on the average £4 Mn. additional claims per annum had to be met from this cause. It was impossible for the companies to continue to include the war risk in new contracts at the ordinary rates, and extra premiums or reduced insurance amount had to be provided for in the case of new entrants who were already in or later joined the Forces.

§ 6. *New Business*

Two other developments of the War period are worthy of note. New business fell off in the earlier years, and there was a fall in the average sum assured per policy. A rise in the average premium per cent reflected the higher age composition of the insured group owing to the exodus of the young. In the later years, when the change in the price level had made itself evident, life insurance began to be effected for higher sums

	Premiums From New Business £Mn	Average Sum Assured Per Policy £
1913	2 5	194
1914	2 3	202
1915	2 1	181
1916	2 1	216
1917	2 8	202
1918	4 1	228
1919	6 1	231
1920	6 6	247

§ 7. *Policy Loans*

The other interesting development was in policy loans. Contrary to what might have been expec-

ted at the outset, the total fell during the War. The period was not one of economic hardship to a large part of the community, but rather the reverse. It has been suggested that the prevailing high rates of interest proved deterrent to borrowers, but the present depression has made it quite evident that such penalties do not discourage borrowers in times of urgent need for cash.

§ 8 *Outside Intervention*

The attempts to bring external pressure upon insurance companies to induce them to grant various concessions or facilities afford, by their lack of appreciation of the principles of insurance, a good example of the working of those principles. The sympathetic plea on behalf of fighting men that policies should not be made to lapse on account of inability to pay premiums was extended to all policies on the ground of the universal dislocation caused by the War, and legislation was actually introduced to this effect. What was not realized was that, every life being a risk, every day of that risk costs the insuring company money. The difficulty was not with claims arising out of deaths or maturity, since arrears could be deducted from the sums assured. The trouble was that people could enjoy the benefit of insurance during the whole War period, pay nothing towards claims maturing in the interval, and then at the end of the period allow the policy to lapse, leaving the arrears irrecoverable.¹ Fortunately the legislation was limited

¹ The surrender value might cover these arrears. Mr S. G. Warner in his discussion of this point in *War and Insurance* omitted to mention this.

to industrial insurance, and even then some ingenious persons who could afford to pay premiums discovered the advantage of taking out a new policy, utilizing the premiums to carry this, and letting the old policy run alongside without cost.

Similar ignorance of insurance practice was displayed by those who suggested that insurance companies should help policy-holders to subscribe to war loans by granting liberal loans on policies. Such help could only have been afforded by the companies realizing assets or borrowing from the banks, and both methods would merely have absorbed other resources available for war loan subscriptions.

Such were the outstanding developments of the War period, the total result being that for many offices depreciation and war claims absorbed virtually the whole of current profits, and the with-profit policy-holders lost five years' bonus. Whereas in the period 1909-14 the divisible surplus of U.K. companies (ordinary and industrial business) amounted to £47 Mn., of which £33½ Mn. accrued to policy-holders, for 1915-20 it only amounted to £26 Mn., of which the policy-holders received £16¼ Mn.

1921-1929

§ 9. *Currency Depreciation*

The outstanding event of the immediate post-War period was the depreciation in the currencies of a large number of important countries. From the insurance point of view this phenomenon deserves special treatment in itself, particularly so

since the world unfortunately is now back in the same situation. We should be quite clear as to the effect of a depreciating currency on insurance contracts. As far as the internal insurance business of a country is concerned, no difficulty arises in the payment of the sums assured. These are covered by assets even though the real value descends to nothing. A 10,000-Mark insurance could be met on maturity out of current receipts or by the realization, say, of 10,000 Marks of German war loan. The contract is fulfilled even though the capital sum is insufficient to purchase a box of matches. There is no need to expatiate on the tragedy which lies behind such a development, but at a moment when currency experiments are being advocated on all sides it is perhaps worth while to emphasize this feature of inflation.

Although the final and decisive effect of drastic depreciation is to wipe out the real value of the insurance, the immediate effect is, as has been explained before, to render the premiums insufficient to cover expenses of management. After a certain point it is not worth while continuing the business, and it pays the company to wind up the contract forthwith with a full settlement of the nominal value of the insurance.

A more complicated situation arises out of currency depreciation when insurance business is transacted over national boundaries. Again we have a problem which is extremely pertinent at the moment. In such cases the fate of the capital sum is not a matter of indifference to the insuring concern. Suppose a British insurance company

transacts business in the U.S.A., with premiums and claims payable in dollars but with the fund kept in sterling assets. If the pound depreciates against the dollar, a disastrous situation may arise. Even before the War one British company was involved in embarrassment through incurring liabilities in rupees and holding the assets against them in sterling. The remedy is to hold sufficient assets in the same currency as the liabilities. This renders the external business self-contained whichever way the currency fluctuates, although in the event of depreciation of the outside currency the trouble still remains that local expenses may rise to a dangerous height. Of course there are opportunities for large profits out of foreign exchange fluctuations, but it is not legitimate for insurance businesses to run these risks.

It is perhaps interesting to show the extent of the external business of U.K. life insurance concerns in the year of Great Britain's latest departure from the Gold Standard.

1931	Business Within U K	Business Without U K
	£Mn	£Mn.
<i>Receipts</i>		
Premiums	65 3	5 4
Annuities	4 7	1
<i>Payments</i>		
Claims	45 2	3 9
Surrenders	12 7	1 0
Annuities	3 4	1
Bonus	1 7	.1
Commissions	3 3	5

§ 10. *Currency Depreciation and Equity Investments*

Currency depreciation raises the interesting question as to the desirability and advisability of investment in equities by insurance concerns. Currency depreciation is used here in the general sense of a fall in the value of the currency in relation to commodities. It is not necessary here to enter into a description of the processes of a trade cycle, for it is well known that periods of rising prices are favourable to profits and that the holders of equities in the form of common stocks or ordinary shares stand to gain largely in such periods both in respect of income and in the possibilities of capital gains.

Undoubtedly an insurance concern, with its liabilities fixed in terms of money, could secure large gains by investing the resources acquired in incurring such liabilities in equities during a period of rising industrial and commercial profits. Successful 'playing' of the trade cycle is the swiftest road to fortune. It should be remembered that the '20's of this century marked a generation of rising prices—this is illustrated by the fact that the present depression has sent historians and other researchers scurrying back to the '90's for precedents—and the experience of that epoch with the tragic episodes of currency debacles seemed to confirm the view that the increasing wealth of the world could best be garnered by securing claims to the equity.¹ The

¹ See *Common Stocks as Long-Term Investments*, by E. L. Smith, a book which promulgated this view. It has been said, perhaps with some exaggeration, that this book made a more profound impression than any economic treatise since the *Wealth of Nations*. It can safely be said that the influence of the latter was more lasting

great American boom in securities which collapsed in 1929 was founded on this belief. It is not surprising, therefore, that the appeal of the ordinary share should be felt in insurance circles and that some advocates of an "enlightened" investment policy should have emphasized the merits of equity holdings.

§ II. U.S.A. *Experience, 1921-1929*

These last comments have anticipated the story of the latter part of the section under review, 1921-29. For the two countries which have chiefly served as an illustration of insurance experience that story can be briefly told. In both countries there was a fairly swift recovery after the collapse of the short post-War boom. In the U.S.A. the recovery proceeded almost uninterruptedly, and culminated in a period of great prosperity. The boom was reflected not in commodity prices, which remained fairly stable, but in an enormous security speculation, favoured by cheap money, and, as indicated above, largely confined to common stocks. The great prosperity induced a huge expansion in life insurance business, as is shown by the growth in the assets of the companies.

TOTAL ADMITTED ASSETS OF ALL U.S. LIFE INSURANCE COMPANIES

	\$Mn.		\$Mn.
1921 .	7.936	1923 . ..	15,961
1924 .	10,394	1929 . .	17,482
1925 "	11,538	1930 .	18,880
1926 .. .	12,940	1931 .	20,160
1927	14,392		

It may be recalled that only an insignificant fraction of these assets were invested in common stocks.

§ 12. *U.K. Experience, 1921-29*

The experience of the United Kingdom was on different lines. After running parallel with that of the U.S.A. up to, say, 1924, it then diverged and, although in relation to the current depression it is now realized that the years 1924 to 1929 were those of comparative prosperity, difficulties peculiar to the U.K. expressed themselves in abnormal features, such as a large volume of unemployment, heavy taxation, and high money rates. How largely the failure to relieve the situation in the U.K. during these years contributed to bring about the present unhappy state of world affairs is a matter of dispute, but, at the time, the instability of the situation made for great uncertainty and delicacy in financial operations. On the other hand, there was a persistent belief that these difficulties were a legacy of the War, and that their liquidation, though tardy, was nevertheless in process. Such developments as the general restoration of the Gold Standard facilitated business and investment abroad, both important considerations for insurance.

The following figures illustrate the influence of the industrial and commercial boom, and also the persistence of high money rates.

UNITED KINGDOM

	Index of Prices of Industrial Shares 15th of Month	Three Months' Rate Average for Week Ending 15th of Month %
1924		
Average	100	3 45
1925		
1st Qr Av	109	4 03
2nd , ,	106	4 46
3rd , ,	107	4 08
4th , ,	114	4 01
1926		
1st Qr Av	114	4 54
2nd , ,	113	4 37
3rd , ,	114	4 40
4th , ,	116	4 63
1927		
1st Qr Av	119	4 23
2nd , ,	121	4 07
3rd , ,	124	4 33
4th , ,	131	4 32
1928		
1st Qr Av	138	4 22
2nd , ,	145	3 91
3rd , ,	141	4 16
4th , ,	143	4 36
1929		
1st Qr Av	147	4 97
2nd , ,	143	5 26

For insurance business the dominating factor was this persistence of high interest yields. After the earlier stage when depreciation of fixed-interest securities had to be provided for, this favour-

able trend in the earnings provided a large margin on actuarial calculations, and, in contrast with the period 1914-21, large—perhaps, in view of subsequent developments, too large—bonuses accrued to the fortunate with-profit policy-holders.

AND THEIR INVESTMENT

CHAPTER VII

INVESTMENT EXPERIENCE IN THE DEPRESSION AFTER 1929

§ I. THE SLUMP IN ORDINARY SHARES

The first feature of the depression was the slump in equities. It was the outstanding financial development of the later months of 1929 and the year 1930. Reference to the tables showing the distribution of the investments of insurance companies of the U.S. and the U.K. indicates that this heavy decline in ordinary shares or common stocks had very little direct effect on the insurance finance of those two countries. Indeed it was a matter for congratulation that insurance business in general had not been swayed by the arguments of the 'enlightened' investment advocates. One can only say in general, because the figures of the tables are merely an analysis for all companies combined, and it is notorious that individual concerns did commit themselves rather heavily to the policy of investment in equities. How gravely and how swiftly they were affected can be seen from the course of industrial share prices during the depression.¹

¹ The indices relate to a comprehensive list of industrial securities. It is not denied that individual securities, or groups of securities, have diverged considerably from the general movement and with more fortunate results—e.g. shares of electrical concerns in the United Kingdom

INSURANCE FUNDS

PRICES OF INDUSTRIAL SHARES

	United Kingdom Average 1924 = 100	United States 1923-25 = 100
1929		
July	136	
August	142	324
September	144	
October	135	
November	121	243
December	121	
1930		
January	124	
February	119	242
March	116	
April	120	
May	119	242
June	112	
July	116	
August	106	211
September	110	
October	103	
November	105	167
December	99	
1931		
January	96	154
February	94	165
March	95 5	166
April	94	148
May	80	130
June	82	126
July	86	130
August	82	127
September	78	108
October	87	93
November	92	95
December	81	74

PRICES OF INDUSTRIAL SHARES (*Continued*)

	United Kingdom 1924 = 100	United States 1923-25 = 100
January .	82	72
February .	80	73
March	86	74
April	83	57
May	77	49
June	73	43
July	83	42
August	86	61
September	90	66
October .	90	58
November	92	57
December	91	54

Apart from the negative advantage obtained by the avoidance of equity holdings, traditional insurance finance enjoyed a positive gain in the early stage of the depression, insomuch as the relief to the money market brought by the collapse of the speculative boom was reflected by a fall in money rates and a corresponding rise in the price of bonds. This movement is, of course, characteristic of every depression. It could not be assumed either that the appreciation of the reserve was permanently secured, nor that the prospect of reduced interest-earnings in the future had to be taken into account as a permanent factor.

The prolongation of the depression brought developments of much more serious concern to insurance finance. The deepening of the industrial depression led to financial embarrassment and strain, and in 1931 the ease of the money market was replaced by acute stringency. Bonds depreci-

ated in correspondence with this change, and in addition suffered by the threats of defaults. In country after country this phase culminated rapidly in a financial crisis, and the autumn saw the staggering event of Great Britain's departure from the Gold Standard. 1932 was a year of desperate floundering with currency experiments and other economic expedients, and in early 1933 the dollar broke. The World Economic Conference held in the summer failed to secure agreement on the question of currency stabilization, and the year is ending in a fog of financial obscurity.

§ 2. U.S.A. EXPERIENCE IN THE DEPRESSION

Again, the insurance experience of the two English-speaking countries require separate treatment. In the U.S.A. in the early stage of the depression the life insurance companies were able to congratulate themselves that as a result of charter provisions, legislative enactments, usage, or good judgment, they were not directly involved in the *débâcle* of the stock market. Indirect effects were inevitable, an important one being the increased demand for policy loans and surrenders by embarrassed speculators.¹ Indeed, the companies might have complained of the unwarranted pressure put by many banks upon their borrowers to reduce or satisfy bank loans out of proceeds of life insurance policy loans or surrenders.

¹ According to a grim joke, a frantic speculator, unencumbered by a suicide clause, delivered the ultimatum. "If you don't loan me \$10,000 on this policy, you will pay out the full amount to-morrow morning."

The defaults on foreign loans which marked the next stage of the depression again left the U.S. companies unperturbed, since a very small percentage of their assets was held in this form; if Canadian securities are treated in a class by themselves the remaining percentage is absolutely insignificant. A very different state of affairs occurred, however, when the complete absence of recovery brought the threat of domestic defaults.

§ 3. The problem of liquidity

The magnitude of this threat will be discussed later, since it did not involve the danger of insolvency and breakdown until the end of 1932, and we are able to present some illuminating figures for the years 1930, 1931, and 1932, for which we are indebted to an extremely interesting paper by Mr. J. R. Hardin.¹ Earlier on, when we discussed the problem of life insurance finance arising out of the periodical inward and outward flow of cash and its relation to the nature and composition of the fund, it was pointed out that in a situation of "stability" the coincidence of the inward and outward flow left the fund intact, and that the form of investment would be governed by the outlook in this respect. The following figures, taken from the above-quoted source, illustrate the experience of American companies over the first three years of the depression:

¹ *Three Years of Performance* (John R. Hardin). Delivered at 26th Annual Convention of Life Insurance Presidents at New York, December 9th, 1932.

CASH OPERATIONS OF FORTY-EIGHT U.S. COMPANIES
 (HOLDING 86.4% OF ADMITTED ASSETS OF ALL
 U.S. COMPANIES) OVER THE PERIOD 1930-32

	Cash Payments	Cash Income
	\$Mn	\$Mn
To living policy-holders:		By Premiums
Policy Loans	2049	Interest, dividends, and rents
Matured Endowments	231	2195
Surrenders	1414	
Dividends	213	
Other	338	
	—	4245
Death Claims	1925	—
	—	6170
	—	9781

No figure is given for the expense item, but if this is put at the outside total of \$2,000 Mn., this still leaves a substantial margin of cash income over cash outgoings available for investment. According to Mr. Hardin, the companies in question in the same period received \$3,007 Mn. from investment maturities, redemptions, or sales, and at the same time acquired through investment or re-investments \$6,715 Mn. of capital items. On the realizations a net gain of \$36 Mn. was obtained, a cash item to be added to the revenue flow, and this was within \$3 Mn. of off-setting a writing-down of capital assets of \$39 Mn., the total net write-off representing only 0.02% of the admitted assets at the beginning of the period.

only nominal. This was seen when the official policy of liberal lending failed to overcome the depression, and the prospect of widespread internal default threatened all financial institutions with disaster. A reference to the distribution of U.S. insurance investments, and a slight knowledge of political and other developments in that country, will reveal that insurance was particularly susceptible to the process of internal defaults. It was committed to farm mortgages; it had participated in the extravagant boom in urban real estate, and in the unwieldy expansion of public utilities, it had large holdings of railway securities, and had greatly increased its investment in state, county, and municipal bonds. The peculiar difficulties of these groups, and the sensitiveness of some of them to the downward turn of the cycle, need not be elaborated. As is known, the embattled farmers resisted foreclosure with shot-guns, urban mortgages were involved in widespread default, public utility combines broke up, railroads which had previously been suffering from the effects of secular changes in transport have been forced into receiverships, and many, and not unimportant, local authorities have had their finances thrown into disorder.

There is a particular lesson in this, both for the layman in insurance matters and also for those who do not appreciate the ramifications of economic relations. In times such as these there is always an outcry against the creditor class, which is personified as a group of hard-faced individuals grinding the corresponding features of the helpless

debtor. Hence there is usually a large measure of public opinion which favours proposals for compulsory moratoria and compulsory reduction of interest charges and other prices, and actually approves of repudiation. The above analysis indicates how these things would work in practice. Sympathetic action to relieve farmers, evicted tenants, railway workers, consumers, or rates and tax payers, would directly react upon insurance investments and therefore upon the policy-holders. The shot of the embattled farmer may echo round the world, only to hit himself or his neighbour. How inflation acts in this respect has already been shown.

§ 4. Policy Loans and Surrenders

A feature of extreme importance in the recent history of American insurance is the problem of the policy loan and the surrender concession. The three-year record given on p 102 shows that nearly half the premium income of that period was absorbed by policy loans and surrenders. The loan figures over a period of years for the fifty-two companies represented in the main table on p 67 are instructive [See table overleaf]

The question arises as to whether the increasing concessions which have been made in the matter of loans and surrenders are legitimate or advisable. Many critics deplore this development, which they assert is not consonant with the true principle of insurance. As has been previously quoted, the operation converts an insurance institution into a pseudo bank of deposit. Mr. Hardin in his excellent paper maintains that these concessions repre-

sent rights, and that the principle that resignation or withdrawal does not extinguish the equities of joint contributors to a single fund has been fully established and is independent of considerations of liquidity or convenience. Whatever the view taken, in practice considerations of liquidity must operate, and if loans and surrenders are not discour-

	Policy Loans and Premium Notes	
Dec 31	\$Mn	% of Assets
1906	255	8 9
1911	523	13 0
1916	750	14 0
1921	977	13 0
1924	1191	12 3
1925	1296	12 1
1926	1428	12 0
1927	1590	12 1
1928	1791	12 2
1929	2140	13 3
1930	2516	14 6
1931	3016	16 4
1932	3500 ¹	18 4

¹ Provisional

aged by punitive charges, then precautions must be taken against this potential demand. That is to say, funds must be held in a more liquid form, which means in normal times in investments yielding a lower rate of interest, and this reduction in earnings must be passed on to the policy-holders in the form of higher premiums or reduced benefits.

§ 5. *Other developments*

A few other details of American experience are worthy of note.

Real-estate holdings of the fifty-two life insurance companies (including the business premises of the companies themselves) increased from \$301 Mn. in 1928, representing 2 1% of the assets, to \$763 Mn., representing 4%, in 1932, the growth in the percentage doubtless being attributable to foreclosures. As is usual in times of difficulty, annuity business has expanded, and this has greatly helped to increase the cash receipts of companies at a time of heavy cash outgoings. On the other hand much of this annuity business is in the nature of investment contracts which permit the annuitant to withdraw a very large proportion of what he has placed in. A large demand liability has thus been created which might prove very awkward if continued depression enforced surrenders.

The prospect of a fall in the rate of interest, either through artificial measures or as a normal development of the capital market, is of serious concern for non-participation companies which have calculated their rates on the basis of 4% or 4 $\frac{1}{4}$ % interest. Participating companies can, of course, meet the situation by reducing their bonuses.

The table on page 108 reflects most recent developments.

COMBINED RECORDS OF FORTY RESERVE LIFE INSURANCE
COMPANIES
(holding 82% of admitted assets of all U S legal reserve
companies)

	Dec 31, 1932	Aug 31, 1933
	(million dollars)	
<i>Mortgage Loans</i>		
Farm	1402	1300
Other .	4734	4537
	<hr/>	<hr/>
	6136	5837
<i>Bonds and Stocks</i>		
U S Government .	359	505
State, County and Municipal	631	657
Canadian Government	390	391
Other Foreign Governments	21	16
Railroad ..	2639	2619
Public Utility	1670	1681
All other .	522	520
	<hr/>	<hr/>
	6232	6389
Policy Loans and Premium Notes	2948	2957
Real Estate .	649	866
Collateral Loans	9	9
Cash .. .	270	400
Other admitted assets .	674	676
 <i>TOTAL ADMITTED ASSETS</i>	 16,917	 17,134

§ 6. U.K. EXPERIENCE DURING THE DEPRESSION

In the United Kingdom a different situation developed in many respects. Internal default was never imminent, although it can be alleged that the danger was avoided by an indecently rapid scurry off the Gold Standard. External defaults were and

are a much more serious consideration for British concerns than for American. Overseas investments both of an official and industrial character represent a large percentage of the insurance assets, and defaults, moratoria, and exchange restrictions must have adversely affected income and also investment operations. The risks of overseas insurance business have also been greatly increased by the instability of currencies, but it is too early to estimate the effects of this.

One of the difficulties of a deflation period is illustrated by the admission of one British company doing property insurance in the U.S.A., that following the falls in values, the volume of insurance premiums has contracted correspondingly, but that it has been impossible to bring about a corresponding reduction in expenses, with the result that these have become so heavy in proportion as to be positively alarming. Another company which lost money in North America stated that the fire premiums of all companies operating in that country declined in 1932 by no less than 25% compared with 1931, while fire losses declined by only $2\frac{1}{4}\%$. Other speakers were quite blunt about this fire experience, regarding it as clear evidence of a ruthless desire on the part of policy-holders to extinguish indebtedness.

Judging by the revenue accounts of British ordinary life insurance concerns, they have experienced no difficulty in maintaining liquidity. The combined figures for 1931 are as follows:

Fund at Beginning, £737Mn

	£Mn		£Mn
Premiums	70 6	Claims	49 0
Annuities	4 8	Annuities	4 5
Interest ..	33 6	Bonuses	1 8
		Commissions	3 8
		Expenses	6 3
		Surrenders	13 7

Fund at End, £754Mn

§ 7. *Developments in the Capital Market*

The most interesting feature has been the development in the capital market. It has already been related how the cyclical ease of the money market in the first year of the depression gave way to acute stringency in 1931. The events of that year, and in particular the abandonment of the Gold Standard, reduced British credit to a very low point, and the end of the year found British gilt-edged and other fixed-interest securities at a very depressed level. This gave rise to an awkward problem for companies whose valuations fell at that date. The next year was even more momentous. The Government staged a huge conversion operation to reduce the interest on £2,000 Mn. of 5% War Loan to $3\frac{1}{2}\%$. 'Staged' is an appropriate word, since the procedure was invested with a considerable amount of artificiality and theatricality. The highly abnormal conditions of the moment were exploited to jockey the public into a swift decision on the merits of an irredeemable bond. The country was off the Gold Standard, and there-

fore to a large extent isolated from the play of world forces in the capital market; the same isolation enabled the authorities to manipulate credit in the interests of cheap money, thus reinforcing the temporary downward pressure on interest rates characteristic of any industrial depression, and all other capital issues were held up pending the operation. The investors were not instructed that the short-term outlook produced by these conditions had very little relation to the long-term prospects of the capital markets; on the contrary, they were given the astounding advice that future movements in interest rates were not a relevant consideration. Insurance finance offers the best possible refutation of such nonsense and also the best comment on the crude argument which personified the War Loan holder as a long over-rewarded individual whose duty it was for once not to "regard the problem as one of pure arithmetic". Many of those whose enthusiasm for the scheme was fortified by the knowledge that they held none of the stock would have modified their views if they had realized their indirect interests through insurance transactions.

An extraordinary biased argument was employed by quoting *up to a certain date* the sequel to the previous large-scale Government conversion operation—the Goschen Scheme of 1888. If the figures showing the course of the price of Consols (see p. 77) are stopped short at 1897 they suggest that a large capital appreciation was enjoyed by the fortunate holders of the converted stock. Such illustrations were actually employed with

convenient omission of the story of the subsequent development when interest rates turned, and for over a generation individuals and institutions were embarrassed by the depreciation of fixed-interest securities. As has been pointed out before, the situation at the moment is in many ways analogous to that of the '90's. A severe and prolonged trade depression has saturated the capital market with idle money; a turn in the trade cycle would speedily alter the situation. A repetition of the experience over the turn of the century would create grave embarrassment to holders of fixed-interest-bearing securities, particularly of the irredeemable type. To judge by the speeches of the chairmen, some insurance concerns are very much alive to this possibility, and have either already realized the profits on gilt-edged securities and reinvested the proceeds in classes of investment not liable to Stock Exchange depreciation, or are intently watching the market with a view to appropriate action. Other speeches, largely confined to self-congratulation on the recovery from the 1931 depreciation, suggest a certain failure to appreciate the serious potentialities of the future. Surely the recommendation given by one chairman that non-profit policies should be more largely taken by the public, ignores the awkward possibilities which might arise for a concern which had to write-off heavy depreciation of the fund without being able to offset this by modification of bonuses.

Another comment is perhaps justified. The important part played by insurance finance in the capital and money markets makes it impossible to

ignore the interests of the insurance world and at the same time necessary to secure its goodwill when any major operation on those markets is contemplated. Hence there is a temptation for the authorities to exert pressure of various kinds to induce the leaders of insurance business to furnish active and moral support of Government financial operations. It should be clear that insurance business has no responsibility for the public finances, nor for the general economic situation of the country. Its sole responsibilities are to its shareholders and, most of all, to the policy-holders. Life insurance is concerned with long-run developments, and is peculiarly qualified to pass judgments on them. It is improper to lend support to artificial manipulations or to encourage public belief in them solely in order to facilitate Government operations on the capital market or the foreign exchanges. Even if the interests of shareholders and policy-holders can be ultimately safeguarded, there is something indecent in the process of publicly advocating a conversion scheme in the knowledge that the stock can be passed on to less sophisticated investors before it is due to depreciate.

The erratic course of the bond market in the United Kingdom in recent years is shown by the following table:

PRICE OF FIXED-INTEREST SECURITIES
 1924=100

15th of Month	1929	1930	1931	1932	1933
January	101	96	104	93	122
February	98	96	99	94	124
March	97	98	100	103	122
April	98	100	100	105	125
May	97	98	103	109	123
June	97	98	105	109	123
July	96	100	102	122	122
August	94	99	99	120	124
September	93	100	98	121	126
October	94	101	93	127	126
November	94	104	94	123	126
December	95	103	90	123	128

§ 8. SUMMARY

This detailed analysis over a period of exceptional fluctuation has served to elucidate the dominating considerations affecting insurance finance. It remains to correct the crude impression which might arise that the interplay of the various factors is self-correcting—bluntly, that things come out in the wash in the long run—and that reasonable prudence and honesty of management are all that is necessary to secure successful continuance of the business. It is true that the adverse influence of a new development on one item may be offset by an associated favourable influence on another. Thus one representative of the insurance world recently argued that although there was a prospect of dearer money when industry revived and a consequent recession in investment values,

he believed there would be more than compensating advantages in greater business activity and the resultant greater volume and value of insurance cover that would be required. The foregoing analysis provides other examples of such compensating movements, but it is interesting to note that opinion in insurance circles is still divided in its interpretation of such developments. Thus in estimating the effects of a rise in interest rates on life insurance, one view maintains that capital security is of more importance than interest-earnings, since no company can permanently be dependent on the casual distribution of bonuses. On the other hand, we encounter the argument that if contracts are entered into on a 3% basis, the higher rate obtainable on future investments is of more importance than falls in the value of assets held at present.

What is often overlooked in such calculations is that in competition past losses or excessive fixed charges cannot be made good out of current and future business. An apt illustration can be drawn from another branch of financial activity. In reply to a complaint that the rate on advances charged by the banks had remained excessive during the depression, it was urged as a reason that the banks' expenses were very heavy since they had been involved in a great deal of new building partly as a result of the vigour with which competition for new business had been pursued, further, that they were generous employers, and that they had lost a good deal in supporting bad borrowers. In addition, that they had many arrangements by which they paid 2½% on deposits all through the boom.

period on the understanding that this rate would be maintained if the boom ceased, and naturally did not want to break this understanding.

Now these alleged reasons may explain why the banks are anxious to maintain their overdraft rates but do not explain why they are able to do so. If a new bank opened, confined itself to modest premises in side streets, and offered slightly less generous terms to its employees, it would start free of all these handicaps and be in a position to offer rates which would force the existing banks into line. Similarly, if one of the existing banks had avoided such commitments, it would set the pace for the others. The present situation is explained by the common action of the banks in the past and the absence of new competition.

The same reasoning applies to the financial operations of insurance. If all life insurance concerns follow a traditional policy and are equally involved by such a development as the depreciation of investments consequent upon a rise in the rate of interest, they may make good the losses by adjustment of future contracts.¹ But a more skilful policy on the part of an existing office, or the advent of a new concern, would tend to give rise to such terms for future business as would prevent such corrections of past losses. At the present moment many British concerns are confessedly

¹ Undoubtedly the varying play of insurance finance over time has resulted in the mulcting of one generation of policy-holders for the benefit of another, but it can be urged that at the outset the policy-holder has an even chance in this respect.

dubious about the outlook for fixed-interest-bearing securities, and are taking precautions to that effect. One form of precaution is the avoidance of irredeemable stock, such as the new $3\frac{1}{2}\%$ Loan (the old 5% War Loan). Another form is a preference for short-dated securities which, although at present giving a low yield, are secure from depreciation, and are available for reinvestment at more remunerative levels in the near future. Investment in Treasury Bills yielding less than $\frac{1}{2}\%$ is an extreme example of such cautious finance. Any investment on a large scale at such an unremunerative return must be based on calculations that the reduced risk of capital losses outweighs the temporary sacrifice of earnings. If these forecasts prove correct, concerns which have ignored these possibilities, or interpreted them in a different way, will be left in a comparatively disadvantageous position as competitors with the other concerns. New concerns would start immune from such possibility of embarrassment, but fortunately for existing institutions, and perhaps unfortunately for the public, new enterprise in the financial sphere is conspicuously lacking in this country.